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ABSTRACT

The Integrated Career Development Curriculum Project was designed to improve career preparation opportunities for youth who attend small, rural schools by developing a curriculum for grades 9 through 12 that would enhance career opportunities for these youth. The rationale and specifications for the project were discussed in terms of basic technology, society and work, and career guidance. The major goals were that the curriculum (1) provide students with concepts about the institutions and dynamics of our society; (2) prepare students in skills and knowledge which have been found to be useful in a wide variety of occupations; and (3) enable students to acquire information about the world of work, occupations, and themselves. It was decided that the curriculum should be individualized, student manageable, and relevant; that it must provide for integration with existing programs; that it should provide articulation with post-high school experiences, include planned work experiences, take into account community resources, and contain motivational elements; and that it must provide a role for the teacher as a consultant and diagnostician. Information included in the appendices cover curriculum development design; objectives in basic technology, in career guidance, and related to society and the world of work; characteristics of rural students and the rural setting, and working guidelines for the project. (PS)

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INTEGRATED CAREER DEVELOPMENT CURRICULUM

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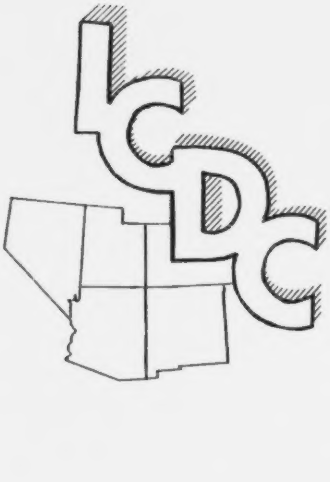
Curriculum Statement

RUSSELL G. MERRELL
HERBERT R. STEFFENS



WESTERN STATES SMALL SCHOOLS PROJECT
CARSON CITY, NEVADA
September 1972

RC 006669

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WESTERN STATES SMALL SCHOOLS PROJECT
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ICDC CURRICULUM STATEMENT

by

Russell G. Merrell
and
Herbert R. Steffens

A project funded by a grant from the U. S. Department of Health, Education, and Welfare; Office of Education; Bureau of Research.

Grant No. 0-8-071323-4646(085)

August 1972

WESTERN STATES SMALL SCHOOLS PROJECT
INTEGRATED CAREER DEVELOPMENT CURRICULUM

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PREFACE

The Curriculum Statement for the Integrated Career Development Curriculum Project is intended primarily for the use of the Project's instructional designers in developing the instructional methods and materials for the project. It should also have value for other persons involved in developing curriculum or designing instruction for small schools. It may even be of use for those working on curriculum for disadvantaged urban youth since some of the problems attacked by this project are common to all disadvantaged students.

The Curriculum Statement gives the general framework and rationale which structures the project; identifies factors in smallness and rurality and the implications of these for the curriculum; defines a process for identifying appropriate content; and states the content identified at the curriculum level.

ACKNOWLEDGEMENTS

The Integrated Career Development Curriculum Project of the Western States Small Schools Project is funded by the U. S. Office of Education, Bureau of Research. This Curriculum Statement is the result of the combined efforts of a large number of individuals including the project personnel listed on the preceding pages. The Project is also indebted to Dr. Philip Teske and Dr. Elizabeth Simpson, program officers for the Project; the Center for Vocational Education, University of Ohio for materials and direction in the Career Guidance domain; to Dr. J. Blair Stone, University of Utah, consultant on Society and Work; and to Dr. Ed Morrison, Mr. Boyd Kowal, and the American Institute of Research who contributed greatly to the definition of instructional objectives in Basic Technology. Dr. Asahel Woodruff, University of Utah has had a persuasive influence on the project through his Life Involvement Model of Instruction.

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INTEGRATED CAREER DEVELOPMENT CURRICULUM PROJECT CURRICULUM STATEMENT

Section I. Introduction

The Integrated Career Development Curriculum Project was designed by the Western States Small Schools Project (WSSSP) to improve career preparation opportunities for youth who attend small, rural schools. The overall goal of the project is the development, implementation and evaluation of a curriculum that will significantly enhance the career opportunities of rural youth, especially those who choose to leave the rural setting for gainful employment. The project funded by the Bureau of Research, USOE, began in June 1, 1968 and extends over a period of four years.

The Western States Small Schools Project is an independent organization formed by five cooperating state educational agencies which are committed to the improvement of educational programs in small, rural communities. This organization began in 1962 to identify problems in the small schools of Arizona, Colorado, Nevada, New Mexico, and Utah as a prelude to designing and testing programs and practices to meet these problems. The inadequacy of career preparation programs in these schools was immediately recognized as a critical problem, and it was concern regarding this problem that eventually led to the ICDC project.

The concern of WSSSP for the lack of vocational-technical preparation in small schools is confirmed by much literature and research. In general, a balanced, comprehensive curriculum has not been available in small high schools because of the emphasis as college preparation and the lack of qualified staff and adequate facilities. (Amberson, 1968; Bohrson, 1965; Edmonds 1969; Oliver, 1966). Rural schools have given little consideration to the needs of youth who migrate from rural to urban centers (The Advisory Council on Vocational Education, 1968; Edmunds 1969). Rural youth who migrate find they have been poorly prepared to compete for jobs with urban reared youth (Bunder and Burchinal, 1963; Edmunds, 1969; The Advisory Council on Vocational Education 1968; Beale, 1967; Breathitt, 1967; James, 1963; Zeisel, 1963). So, while lack of vocational education opportunities represents a handicap for all youth in small schools, it becomes a critical factor in the lives of that majority who migrate to urban centers.

Section II. Rationale of the ICDC Project

The basic problem attacked by this project is, then, the lack of adequate career preparation programs for youth who attend small, rural schools, particularly for those who ultimately become employed in the more complex urban society. The purpose of the project is to develop a curriculum that will enhance career opportunities for these youth. The curriculum includes both the appropriate content or scope of important learnings and the appropriate delivery system or instructional mode to be employed. Since the overall objective is applicable to all students, the curriculum is appropriate for all students. It is focused on career preparation, career education, and is useful for any student regardless of the specific nature of the career he ultimately chooses to follow.

A general outline of the content of the curriculum was presented in the project proposal. This content was rationally derived from the goal of "enhancing the career opportunities of rural youth" and was specified in the form of relevant skills, competencies, and knowledge in four areas or domains: basic technology, society and work, career guidance, and specific job entry skills. It should be noted that these domains were identified for convenience in analysis only. At no time was it suggested that these areas were independent, separate components of a career preparation curriculum, but rather they would serve only to aid the curriculum designer in his search for the fundamental phenomena related to career choice and career development.

It will be further noted that the development of specific job entry skills is not included in this curriculum project. Several considerations led to this decision. In the first place an informal survey of the schools to be served revealed that very few students, never more than five in any one school, entering school at the ninth grade would drop out prior to completion of their senior year, or planned to terminate their education upon graduation from high school. To develop an individual curriculum in specific job entry skills for each of these students that could be implemented in a rural setting would be unrealistic. It was reasoned that a more satisfactory approach would be to help each school make individual arrangements for these students taking into consideration the resources available and unique arrangements that could be made in each school setting.

Secondly, it was believed that substantial proportions of the total learning required for job entry would be provided through the ICDC curriculum, and that the remainder, primarily manipulative skills, could be provided locally or deferred for later development through an abbreviated technical school experience or on-the-job learning. It is not, therefore, the intention of the project to ignore the needs of those few students who require specific job entry skills even though the curriculum developed is not aimed at such skills.

In summary, the primary concern of the project was the development of curricula around three domains of objectives related to career choice and career development. These domains were identified to aid analysis only.

Section III. Rationale for the Three Domains in ICDC

The rationale and specifications for these three domains is discussed in the following paragraphs:

A. Basic Technology.

In any school system the attempt to provide adequate preparation for a career is faced with serious difficulties. On the one hand, it is desirable that graduates have the specific capabilities needed to preclude the necessity for special post employment training, long periods of apprenticeship, and extensive job experience before a reasonable level of job proficiency is achieved. This might be called "job readiness." On the other hand, preparation which is too job specific may produce graduates who are only narrowly competent and thus are unable to elect alternative opportunities in a changing job market.

The problem of defining a curriculum which provides adequate preparation for employment situations in a climate of continual change is a difficult one which has precipitated much discussion and research. It is recognized as important to the individual and to the society to which he belongs that each individual acquire the knowledges and skills which undergird a variety of occupations and relevant to a variety of non-occupational life circumstances; and which can, therefore, provide a reasonable basis for competent versatility. Such skills and knowledges are called general capabilities. On logical grounds, it is possible to conclude that such general capabilities should be included in the objectives of vocatioanl education. The problem is identifying these capabilities with enough specificity that curricula can be developed for teaching them. To do this the Basic Technology component was selected as an integral element in ICDC.

A search of the literature and research concerning general capabilities resulted in the identification of a study conducted by James Altman under a grant from the Ford Foundation as being most relevant to the identification of such capabilities for this project. (Altman, 1965). Using the Altman study as a base curricular objectives were identified for the domain of Basic Technology (See Appendix B).

B. Society and Work.

The overall project objective implies that rural youth should have basic knowledge about the institutions and dynamics of the society which generate, define, and lend meaning to occupation. The student must be able to understand how that society functions, what forces are used to maintain it, what forces work to change it, and how he, as an individual, relates to the whole. A major skill required is the ability to make reasoned and responsible decisions, which are based on an understanding of what's happening, why it is happening, how it affects the individual in his own situation and how he might behave to influence social outcomes. Moreover, these decisions should reflect an accurate if limited notion of what the consequences of his behavior, and the behavior of others, are likely to be for the individual, for his community, and for society. Necessarily this involves some sense of the lessons of the past, some insight into the phenomena of the present, and some ability to anticipate and forecast the future.

For students socialized in a rural setting but destined to participate in an urban setting, this problem is magnified. They must learn to appreciate cultural diversity beyond what they are able to experience in small rural communities and maximize the potential of the culture in which they find themselves. To live in any society implies some ability to support oneself. In today's society this subsistence is translated into a paycheck. But acquiring and holding an appropriate job is not the only measure of success, nor the only criterion for effective membership in society. In addition a person needs to find satisfying ways of spending his leisure time, success in family living and rewarding participation in citizen responsibilities.

Students should be helped to see the social implication of career choices and should be helped to take these implications into account in making career choices. The increasing amount of leisure time presents man today with additional opportunities. A citizen should be able to maximize the use of this time in constructive activities. This ability in turn is essential to his own success as he may come to define success.

Responsibility is not limited to the individual deriving whatever benefit he can from his environment; cities need--even require--citizens who are able both to cope with the exigencies and to contribute to the creation of quality environments in which to live and work. This means the reduction of problems in an immediate sense in the light of some perspective as to what society and the community should be. To anticipate the rural to urban migration patterns and to prepare those migrants for the new society is an immediate responsibility of the rural schools. Thus, the Society and Work component was made an integral part of ICDC and its objectives were specified. (See Appendix C).

C. Career Guidance:

In improving and extending programs of vocational and technical education, vocational guidance has been assigned a vital role.

Theoretical concepts in vocational guidance are many and varied. Each has its disciples and its critics and each has created controversy. However, basic to each of the theories is an assumption that is not debated but generally accepted; namely, students need help in making wise career decisions and the school can provide such help. It follows that if a curriculum is to be developed that will "enhance the career opportunities of rural youth" it must include provision for such help. Therefore, guidance, defined as a learning process which emphasizes solutions to two basic issues in career decision making - one, who am I? and two, what appropriate information, interests, skills and aspirations are important for effective decision making? - was included as one domain of this curriculum.

The concept of guidance, while at present a practice throughout the world, is uniquely American in origin and philosophy. As our society has become more complicated, more industrialized, more technological, more impersonal and more uncertain, there has arisen a counter-vailing force rooted firmly in the basic value of individual worth and self-determination. This counter-vailing force has become identified as guidance and counseling and has been made available for young persons who are making significant personal and vocational choices; those rural youth who are seeking better, more productive ways of living.

Thus, the Career Guidance component of the Integrated Career Development Curriculum will provide life related opportunities for the student to learn about himself - his talents, abilities and interests related to career development, to acquire the appropriate information, skills necessary to wise career decision making and some counseling service in combining knowledge of self and career opportunities into a personal career choice. (See Appendix D).

The project will test whether a curriculum derived from these three domains will significantly enhance the career success of rural youth. Curriculum objectives have been identified in each domain. The design through which they were derived is described in Appendix A. The resultant objectives are identified in Appendices B, C, and D.

Section IV. "Integration" as defined in ICDC

"Integration" has been defined by the project at four different levels. Originally as used in the project proposal an "integrated career development curriculum" meant simply that curriculum content would be "blended" or fit into the present content curriculum of the school. This new curriculum would be "integrated" with the on-going curriculum and not differentiated as a separate curriculum. This remains a thrust of the project. However, as the project has developed new meanings have become appropriate to the term "integrated."

First, as the content for the curriculum was derived from the overall goal of the project by the process described in Appendix A, an attempt was made to validate each tier of objectives in terms of the next higher tier of goals. This has been referred to as a "vertical integration" of the curriculum.

Second, when the three major domains of the curriculum were identified, there developed a temptation to treat each of these as a separate, distinct entity, each worthy of analysis for content definition by itself. Since this division of the curriculum into three domains was, after all, an artificial one made only for convenience in analysis, it became imperative to integrate at the instructional level, the three curricular components. Thus, the project began to address itself to the need for integration across the three domains or "horizontal integration." The content derived in each of the domains must be recombined wherever possible with the content from the other domains to make meaningful wholes for instruction. In a sense, the fragmentation that occurs in the analysis of goals for content must be overcome and, once identified, the content must be put together again into its natural phenomenal state.

Finally, the project realizes that a part of integration centers in the student himself. It is recognized that the student is an active force in his environment and only as he is able to tie instruction, both content and method, back to want serving tasks and real life situation, will meaningful integration be achieved. Hence, the instructional designers must take the need for this "personal integration" into account. All parts of the curriculum will be brought together to make sense and be of use to the student.

Section V. Goals and Objectives of the Project

As stated earlier, the broad policy level goal of the ICDC Project is to develop, test, and evaluate an integrated career development curriculum that will enhance the career opportunities for youth in small, rural schools, particularly those who ultimately become gainfully employed in urbanized society.

The objectives of such a curriculum were derived rationally from this overall goal of the project. These program level objectives are:

1. The curriculum will prepare students in skills and knowledge which research has found to be useful in a wide variety of occupations. This is the basis for the domain of Basic Technology.

2. The curriculum will provide students with concepts about the institutions and dynamics of our society which generate, define, and lend meaning to occupations. This is the domain of Society and Work.

3. The curriculum will enable students to acquire information about the world of work, occupations, and about themselves, and to work with systematic methods for relating the two so as to reach realistic career decisions for

themselves and to develop skill in the processes required in career planning. This is the basis for the domain of Career Guidance.

From these program level objectives, the curriculum objectives were derived and are stated in Appendices B, C, and D.

Section VI. Assumptions of the Project

That there are differences between urban and rural in students, schools, environments, and communities is a basic assumption of this project. Unique elements in the rural setting, rural people and rural life makes it possible and necessary to build a curriculum for rural youth that takes these into account. The description of the rural student and rural setting in Appendix E of this document, illustrates some of the unique features of rurality which should be given consideration by curriculum and instructional designers.

It is also an assumption of the project that at least some of these unique factors will continue to be of importance in rural life. Out-migration, lack of variety in adult models, lack of the most qualified teachers, are examples of facts of life in the rural community and school which will continue into the forseeable future.

Finally, it is an assumption of the project that there are some strengths in smallness and in rurality which can become a base for a strong curriculum. The greatest of these are the strengths of identity and flexibility; both are considered at greater length in Appendix E.

Section VII. Methods and Strategy

As stated above, the curriculum developed by this project will include both the appropriate content or scope and an appropriate delivery system. The content has been derived from project goals by a process of tiering described in Appendix A, and the content so identified is given in Appendices B, C, and D.

Priority and emphases on content is determined from an analysis of the strengths and constraints imposed by rural students and the setting in which they learn.

The instructional strategy system was chosen on the basis of its effectiveness in light of the strengths and constraints of the rural students and the rural setting and on the basis of the content to be delivered.

It has been necessary, then, for the Project to develop a description of the rural student and the setting in which he learns so that these factors can be considered in developing the curriculum. This description is detailed in Appendix E.

The implications these factors have for the ICDC are detailed in Appendix F, of this document. To summarize these briefly, the curriculum should be an individualized, student manageable, relevant one. It must provide for the integration discussed in Section II. It should provide articulation with post high school experiences and should include planned work experiences. It should take into account community resources available to the school and suggest ways of mobilizing and utilizing these. It must contain motivational elements to combat low aspiration and motivation in some of the target population. And it must provide a role for the teacher as a consultant and diagnostician rather than as a subject specialist.

APPENDICES

APPENDIX A

ICDC - Curriculum Development Design

The curriculum development design and procedures being followed by the project were formulated on the basis of the design implied by the project proposal. It has been given detail and substance through work with consultants on curriculum development, through reality tests with personnel from project schools, through a review of curriculum development literature, and through constant feed-back from the Project's Quality Assurance Panel. The flow chart "Curriculum Design for ICDC" beginning on page 14 gives a graphic representation of the curriculum development design used in the project including the essential steps involved.

STEP 1

Define Curriculum Content

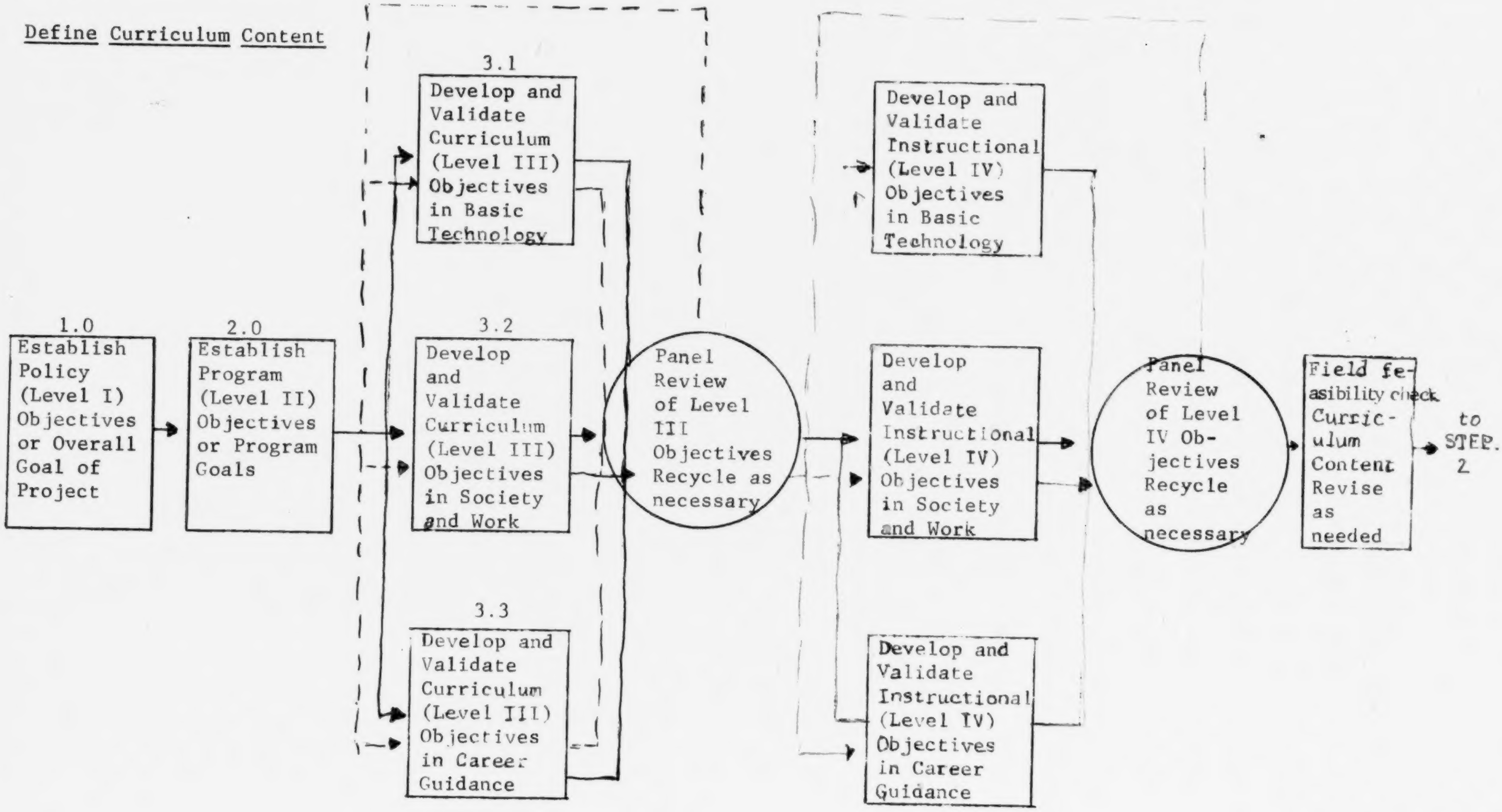
1.0
Establish Policy (Level I) Objectives or Overall Goal of Project
2.0
Establish Program (Level II) Objectives or Program Goals
3.1
Develop and Validate Curriculum (Level III) Objectives in Basic Technology
3.2
Develop and Validate Curriculum (Level III) Objectives in Society and Work
3.3
Develop and Validate Curriculum (Level III) Objectives in Career Guidance
Panel Review of Level III Objectives Recycle as necessary
Develop and Validate Instructional (Level IV) Objectives in Basic Technology
Develop and Validate Instructional (Level IV) Objectives in Society and Work
Develop and Validate Instructional (Level IV) Objectives in Career Guidance
Panel Review of Level IV Objectives Recycle as necessary
Field feasibility check Curriculum Content Revise as needed
to STEP. 2

Figure 1. Curriculum Design for ICDC

STEP 2

Determine Curriculum Strategy

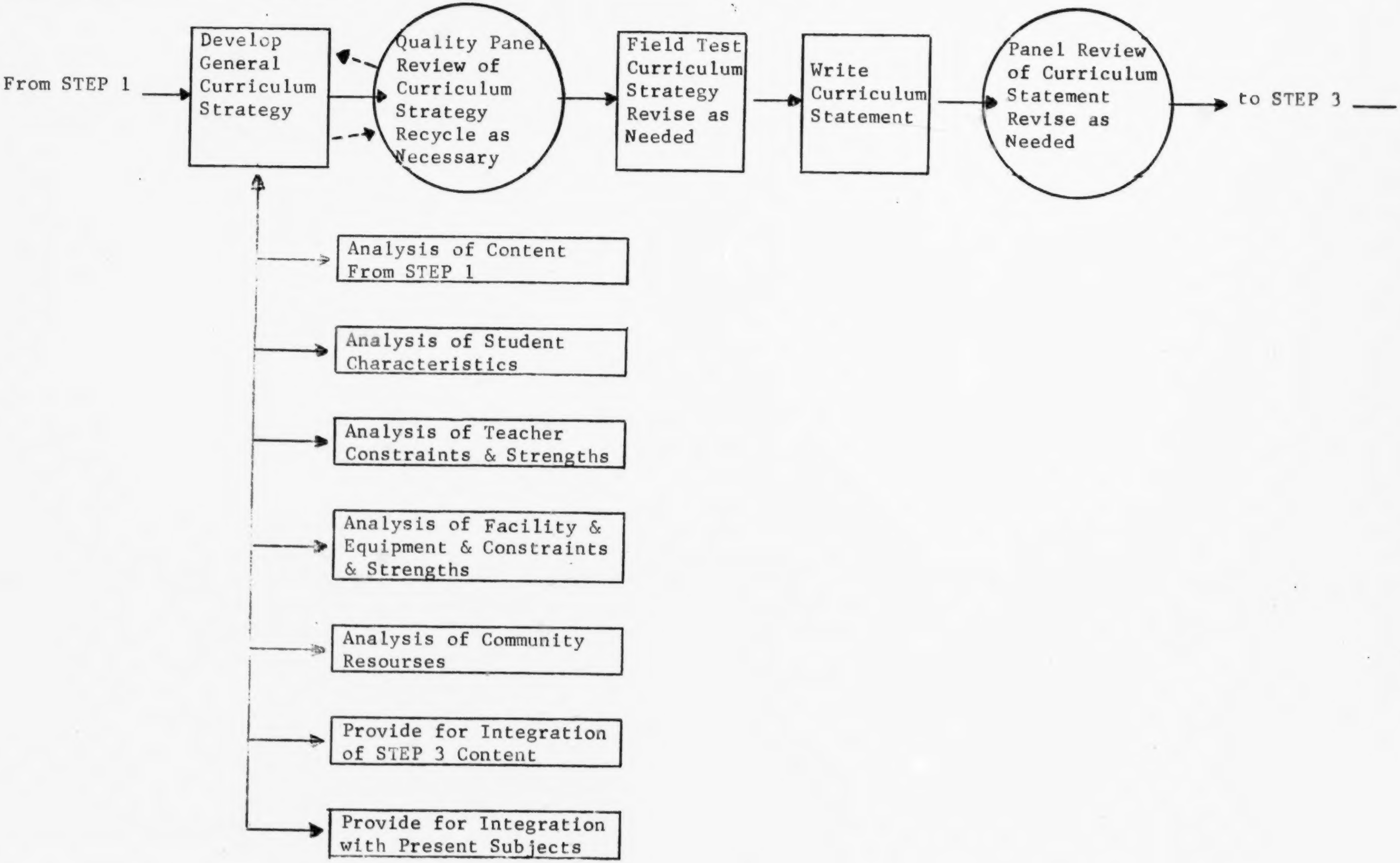
From STEP 1
Develop General Curriculum Strategy
Quality Panel Review of Curriculum Strategy Recycle as Necessary
Field Test Curriculum Strategy Revise as Needed
Write Curriculum Statement
Panel Review of Curriculum Statement Revise as Needed
to STEP 3
Analysis of Content From STEP 1
Analysis of Student Characteristics
Analysis of Teacher Constraints & Strengths
Analysis of Facility & Equipment & Constraints & Strengths
Analysis of Community Resourses
Provide for Integration of STEP 3 Content
Provide for Integration with Present Subjects

Figure 1 (con't) Curriculum Design for ICDC

STEP 3

Determine Instructional Strategy

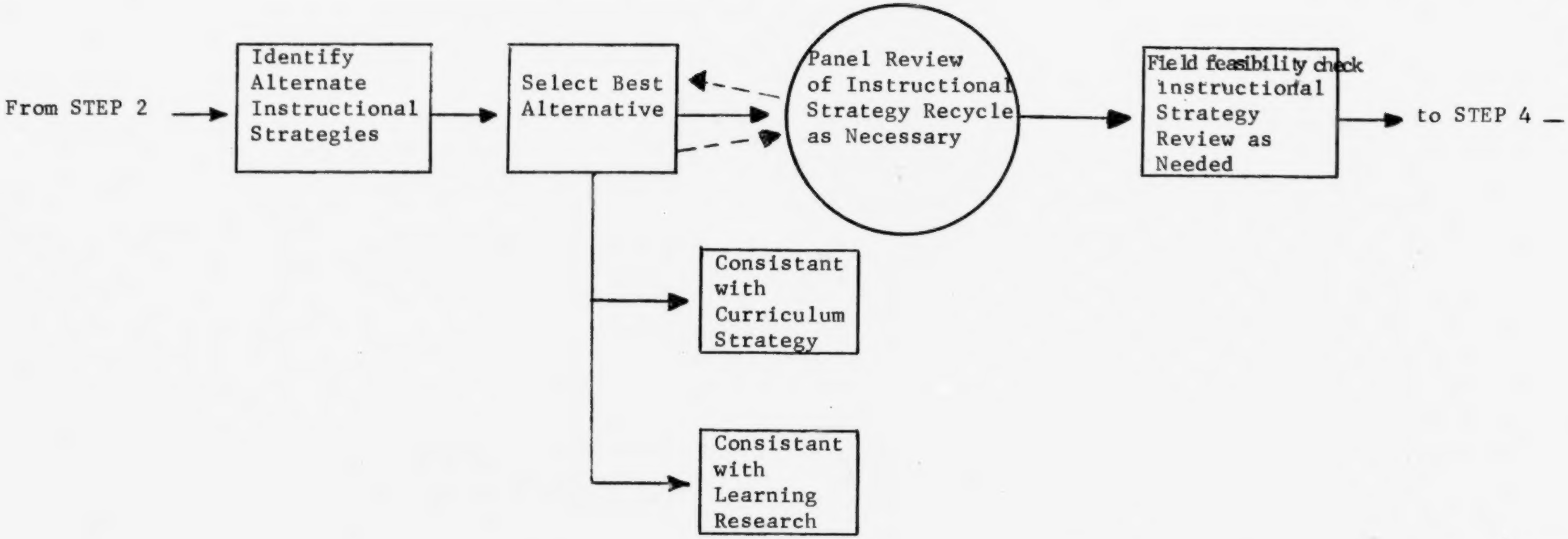
From STEP 2
Identify Alternate Instructional Strategies
Select Best Alternative
Panel Review of Instructional Strategy Recycle as Necessary
Field feasibility check instructional Strategy Review as Needed
to STEP 4
Consistant with Curriculum Strategy
Consistant with Learning Research

Figure 1 (con't) Curriculum Design for ICDC

STEP 4

Production of Product

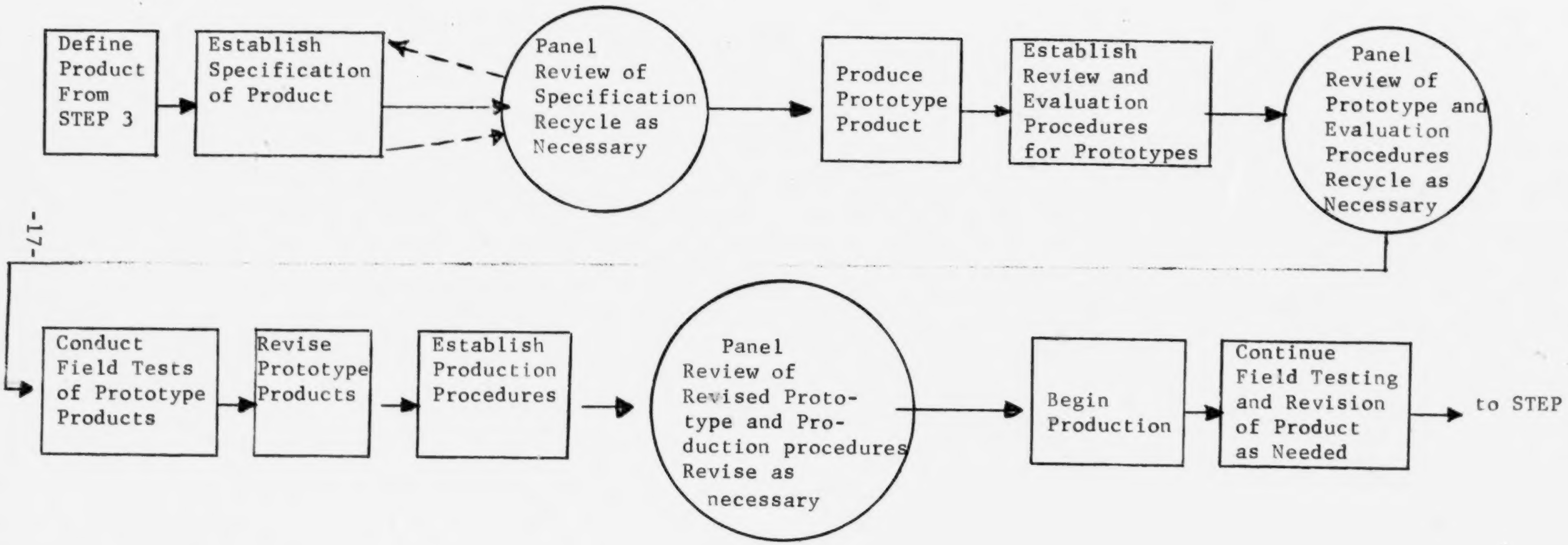
Define Product From STEP 3
Establish Specification of Product
Panel Review of Specification Recycle as Necessary
Produce Prototype Product
Establish Review and Evaluation Procedures for Prototypes
Panel Review of Prototype and Evaluation Procedures Recycle as Necessary
Conduct Field Tests of Prototype Products
Revise Prototype Products
Establish Production Procedures
Panel Review of Revised Prototype and Production procedures Revise as necessary
Begin Production
Continue Field Testing and Revision of Product as Needed
to STEP

Figure 1 (con't) Curriculum Design for ICDC

S T E P 4a

Production of Single Concept Learning Units

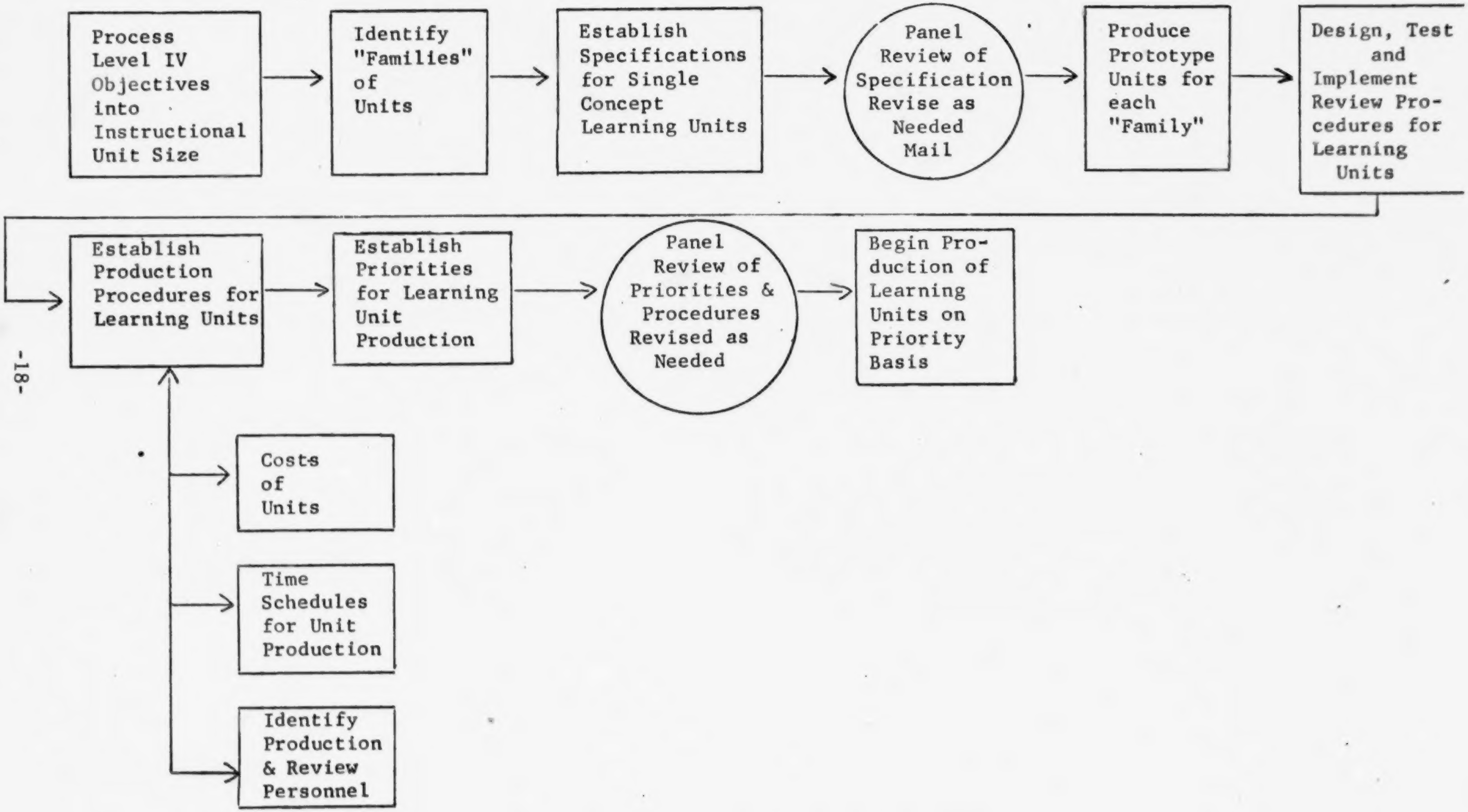
Process Level IV Objectives into Instructional Unit Size
Identify "Families" of Units
Establish Specifications for Single Concept Learning Units
Panel Review of Specification Revise as Needed Mail
Produce Prototype Units for each "Family"
Design, Test and Implement Review Procedures for Learning Units
Establish Production Procedures for Learning Units
Establish Priorities for Learning Unit Production
Panel Review of Priorities & Procedures Revised as Needed
Begin Production of Learning Units on Priority Basis
Costs of Units
Time Schedules for Unit Production
Identify Production & Review Personnel

Figure 1 (con't) Curriculum Design for ICDC

STEP 5

Implementation of Curriculum in Project Schools

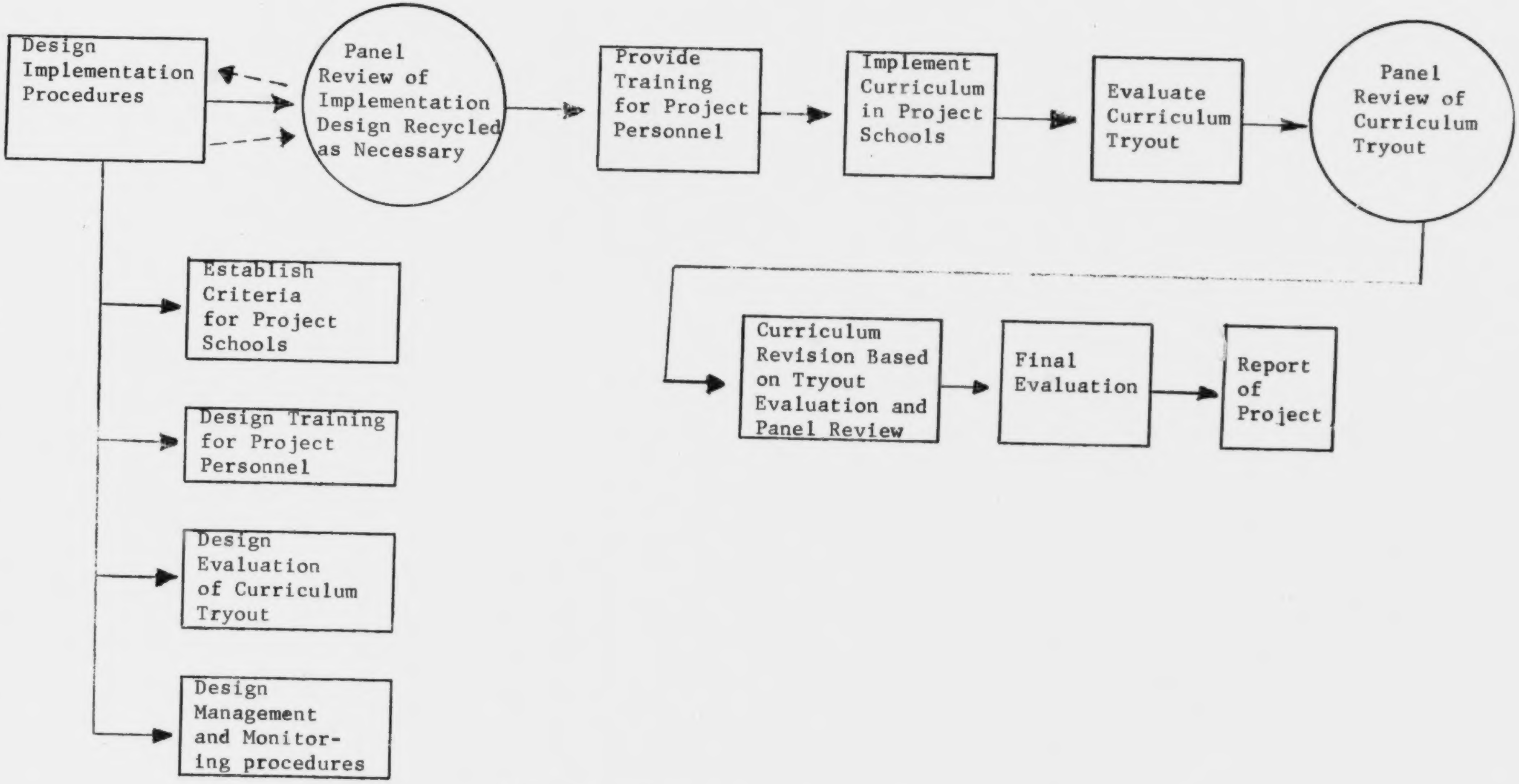
Design Implementation Procedures
Panel Review of Implementation Design Recycled as Necessary
Provide Training for Project Personnel
Implement Curriculum in Project Schools
Evaluate Curriculum Tryout
Panel Review of Curriculum Tryout
Establish Criteria for Project Schools
Design Training for Project Personnel
Design Evaluation of Curriculum Tryout
Design Management and Monitoring procedures
Curriculum Revision Based on Tryout Evaluation and Panel Review
Final Evaluation
Report of Project

Figure 1 (con't) Curriculum Design for ICDC

Definition of the Scope of the Curriculum

The content of the curriculum has been derived from the overall goals of the project through a process of tiering using inference to derive each level objective from the one preceding it. The ICDC proposal identified the overall goal (Level I) of the curriculum to be the enhancement of career opportunities for youth from small rural schools. This was identified on the basis of the rationale given in Section II of this document. From this goal were derived the three domains (Level II,) of the curriculum.

The next task was to define those three domains in terms of curriculum goals (Level III) and provide validation of these curriculum goals. This has been done and the resultant curriculum goals with the rationale for their selection are given in Appendix B, C, & D. The next step in the identification of content was the reduction of the curriculum goals to instructional objectives by identifying the in-life functions that are critical to each curricular goal and the phenomena in each function. The critical properties of these phenomena were then identified. The analysis of in-life functions provides the curricular increments for constructing individual learning units.

Selection of Instructional Strategies

Once content was defined at the curriculum level (Level III) some general decisions were made as to the broad strategies to be used in bringing this content to the student. This required a careful examination of the content and its rationale, an analysis of the traget population and the setting in which it learns, and the requirements of the proposal. This task has been completed and the results are stated in Appendix F of this statement. From these general strategies, specific instructional strategies, delivery systems, were selected and are reported in the ICDC Instructional Statement.

Product Development

On the basis of the instructional content and instructional strategies defined for the project, curriculum products were developed for use by students. Specifications were developed for these products and these were reviewed by the Quality Assurance Panel. Once the specifications were determined, prototype products were produced, reviewed, priorities determined and production begun. The products are being field tested during the 1971-72 school year, revised on the basis of the evaluation of these tests and the ICDC will be ready for full scale implementation and evaluation by the 1972-73 school year.

APPENDIX B

Objectives in Basic Technology

The ICDC objectives in Basic Technology are based on the study mentioned in Section II by James Altman (Altman, et al, 1965). They represent an attempt to provide the student with the knowledge and skills which undergird a variety of careers and thus provide him with a reasonable basis for competent versatility. These objectives were developed by the project from the continuum of general capabilities ranging from mechanical to human identified in the Altman study.

The ICDC staff found that it would be impossible within the time and money limitations of the project to address the project to all of the Basic Technology objectives identified by the project. As a result, a survey of 16 project schools was made to determine which of these objectives, if any, were presently being attacked by the current school programs. On the basis of information gathered in this study those objectives in Basic Technology not now being pursued by the school were given top priority for inclusion in ICDC. Therefore, the ICDC curriculum and curriculum materials represent an abridgement of the Basic Technology objectives. However, the full list of objectives as identified in the Basic Technology domain are given in this Appendix. It is hoped that these will be of value for curriculum designers in career education. It is also a reminder that much work remains to be done in this domain.

I. Machines and Mechanical Principles

The student will perform, or describe the performance of, tasks drawn from the machines and mechanical principles section of the domain of general vocational capabilities.

A. The student will perform, or describe the performance of, tasks involving general mechanical principles. In so doing, the student will display capabilities which are indicative of proficiency in the practical application of:

1. Newton's laws of motion
2. The six simple machines
3. Compound machines
4. Mechanical advantage
5. Friction
6. Optics
7. Common mechanical symbols

B. The student will perform, or describe the performance of, tasks involving tools and tool usage. In so doing, the student will display capabilities which are indicative of proficiency in the practical application of tool classes, use of tools, care and maintenance of tools, and care, use and maintenance of power tools.

C. The student will perform, or describe the performance of, tasks involving measurement. In so doing, the student will display capabilities which are indicative of proficiency in the practical application of:

1. Scaling
2. Estimation/interpretation
3. Measuring systems
4. Compound measuring systems
5. Inter-systematic conversion
6. Measuring instruments

D. The student will perform, or describe the performance of, tasks involving stationary equipment operation. In so doing, the student will display capabilities indicative of proficiency in the practical applications of operation of motors, operation of driven systems (pumps, generators, etc.), and operation of fluid transfer systems (air, refrigerant, hydraulics, etc.).

E. The student will perform, or describe the performance of, tasks involving vehicular operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of vehicular componentry and behavioral aspects of vehicular operation.

F. The student will perform, or describe the performance of, tasks involving connection and fitting operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of methods of connection, factors influencing type of fitting used, characteristics of methods of connection, and connection and fitting operations.

G. The student will perform, or describe the performance of, tasks involving fluid system operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of basic principles of fluid systems--Pascal's principles and the gas laws, fluid system components, and application of fluid systems.

A. The student will perform, or describe the performance of, tasks involving general mechanical principles. In so doing, the student will display capabilities which are indicative of proficiency in the practical application of:

1. Newton's Laws of Motion

   (Will be derived from other objectives.)

2. The six simple machines

   a. Identify six simple machines, the wheel and axle, inclined plane, pulley, lever, gears, screw.

   b. Demonstrate function (multiplication of force or speed) of simple machines.

3. Compound machines

   (A combination of simple machines.)

4. Mechanical advantage

   a. Demonstrate by performing a task, uses of friction and tension as mechanical principles. Uses include:

      (1) Brakes
      (2) Clutches
      (3) Belts

   b. By performing a task the student will do the following:

      (1) Identify various kinds of power trains such as:

         (a) Belts and pulleys
         (b) Chains and sprockets
         (c) Shafts
         (d) Gears
         (e) Pressurized fluid

      (2) Analyze gear systems as to function.

         (a) Power or speed multipliers
         (b) Transmit power
         (c) Timing function

   c. Analyze by performing a task, the functions of linkage systems used for the transmission of power. They include such linkages as the following:

(1) Steering linkage
(2) Brake linkage
(3) Electrical linkages
(4) Fluid linkages

d. Identify instances where inertia and momentum affect mechanical processes (e.g. starting a heavy load from rest, flywheels).

5. Friction

a. Identify the various types of bearings which include:

(1) Roller bearing
(2) Ball bearing
(3) Sleeve bearing
(4) Needle bearing
(5) Nylon bearing
(6) Teflon bearing

b. Select the appropriate type of bearing for a prescribed function.

c. Identify the functions of the various types of bearings.

d. Associate proper lubricants with given bearing function.

e. Distinguish between faulty bearings and shafts and operable bearings and shafts.

f. Repair or replace faulty bearing/shaft.

g. Demonstrate the effects of improper lubrication, excessive speed with resulting heat and binding.

6. Optics

a. Identify the various kinds of lenses and mirrors commonly used in the field of optics.

b. Demonstrate by doing a task the principles of light reflection. (Painting to reduce heat absorption, increasing lighting efficiency, etc.).

c. Demonstrate by doing a task the principles of light refraction. (Condensing or diffusing light as in projectors, cameras, binoculars, etc.).

d. Assemble a set of lenses and/or mirrors and prisms into an optical system (e.g. telescope).

7. Common mechanical symbols

a. Identify common mechanical symbols (symbols for valves, welding, structural symbols, etc.).

B. The student will perform, or describe the performance of, tasks involving tools and tool usage. In so doing, the student will display capabilities which are indicative of proficiency in the practical application of tool classes, use of tools, care and maintenance of tools, and care, use and maintenance of power tools.

1. Common hand tools

a. Identify common hand tools by appearance and function. Common hand tools include:

(1) Hammers
(2) Saws
(3) Wrenches
(4) Screwdrivers
(5) Chisels
(6) Planes
(7) Files
(8) Knives
(9) Drills
(10) Snips
(11) Punches
(12) Tube cutters
(13) Reamers
(14) Pliers
(15) Taps and dies
(16) Awls

b. Select appropriate tools, given a task requiring the use of tools.

c. Demonstrate the capability in using selected common hand tools in their prescribed manner, given a task requiring the use of tools.

d. Demonstrate the capability in tool maintenance, given a variety of hand tools and maintenance procedures.

2. Delicate precision tools

a. Identify various delicate precision tools by their characteristics and functions. (Precision tools are refinements of common hand and power tools.) Precision tools include:

    (1) Jewelers lathe
    (2) Micrometer
    (3) Surface gauge and block
    (4) Surgical tools

3. Common power tools

    a. Identify power drills, power saws, jointers, grinders, lathes, sanders, milling machines, and routers by their characteristics and functions.

    b. Select the appropriate unit of power equipment, given a task requiring the use of power equipment.

    c. Set up a given unit of power equipment given the unit, tools and the set up sequence.

    d. Operate a given unit of power equipment, given the unit and the steps required for its operation.

    e. Cut materials with power equipment to ± 1/16" given materials, cutting requirements and selected power cutting equipment.

    f. Drill materials, given materials, layout and drilling equipment.

    g. Shape materials to configurations indicated on layout or to verbal or written specifications, given materials, hand tools and shaping equipment.

    h. Smooth materials to desired written or oral specifications, given materials, and power smoothing equipment.

    i. Identify maintenance procedures required by various common power equipment units.

    j. Execute various maintenance procedures required by common power equipment units.

    k. Identify the safety precautions required by common power equipment units.

4. Selected special tools

   a. Identify by their characteristics or functions the following: flaring tools, spanner wrenches, Allen wrenches, hand punches, crimpers and swagers, feeler gauges, wire strippers, trouble shooting instruments.

   b. Select the appropriate special tools, given a variety of tools and a task requiring use of a special tool.

   c. Use special tools in their prescribed manner, given special tools and tasks requiring use of special tools.

C. The student will perform, or describe the performance of, tasks involving measurement. In so doing, the student will display capabilities which are indicative of proficiency in the practical application of:

1. Scaling

   (See Spatial section of Basic Technology)

2. Estimation

   a. Identify the principles of estimation such as reference points, comparisons with known objects, etc.

   b. Estimate the sizes of given objects by comparing them with objects of known sizes, reference points, etc.

   c. Identify the various units of measure including:

      (1) Time units
      (2) Distance units
      (3) Volume units
      (4) Rate units
      (5) Rate of change units
      (6) Angle units
      (7) Light units
      (8) Heat units
      (9) Sound units

   d. Measure with a 1 ft., 3 ft., or 6 ft. rule to ± 1/16".

   e. Measure with a micrometer caliper to ± .001".

   f. Measure a dimension with a "go-no go" gage.

g. Measure with a vernier caliper to ± .001".

h. Weigh a given object to ± 1 gm. with a balance or spring scale.

i. Weigh a given object to ± 1 oz. with a balance and/or spring scale.

j. Measure the quantity of liquid to ± 1 cc with a graduated cylinder.

k. Measure a quantity of liquid to the nearest gallon, quart, and/or pint.

l. Measure temperatures to the nearest degree with a Farenheit and centigrade thermometers.

m. Measure pressures with a pressure gage to the nearest 1 p.s.i.

n. Convert inches, feet, yards, and miles to centimeters, meters and kilometers using the appropriate conversion formulas and procedures and vice versa.

o. Measure or determine the gage of wire or sheet metal with appropriate gages.

p. Convert Farenheit degrees to centigrade degrees and vice versa, using the appropriate conversion formulas.

q. Identify between those measuring situations where tolerances are required.

r. Differentiate between various degrees of tolerances required ± ½", ± ¼", ± .001", ± 1°C, ± 1 mg., etc.

s. Measure given distances within given tolerances (E.G. ± 1/8", ± .005", etc.).

t. Measure given volumes within given tolerances (e.g. ± 1 ml, ± 1 pt., etc.).

u. Measure given speeds of given objects within given tolerances (e.g. ± mph, etc.).

v. Associate given measuring procedures with given measuring instruments.

w. Execute the appropriate procedure when measuring with a given instrument such as a rule, micrometer, outside/inside calipers, etc.

3. Measuring systems

a. Identify various measurement units and conversion units. These would include:

(1) British system (in., ft., lb., etc.)
(2) Metric system (meter, liter, gram)
(3) Apothecary system
(4) Troy weights
(5) Centigrade and Farenheit
(6) Conversion formulas
(7) P.s.i.
(8) Mph
(9) Calories

4. Compound measuring systems

(Combination of single measuring systems.)

5. Inter-Systematic conversion

(Expansion or contraction of measurement.)

6. Measuring instruments

a. Identify various measurement instruments by their characteristics and uses. Measurement instruments include:

(1) Characteristics

(a) Rules
(b) Micrometers
(c) Scales (1 weight)
(d) Vernier calipers
(e) Liquid and dry measures (quart, pint containers)
(f) Land measuring (surveying)
(g) Pressure gauges
(h) Thermometers
(i) Pyrometers
(j) Speedometers

(2) Uses

   (a) Time (stop watch, clock)
   (b) Distance (micrometer, odometer)
   (c) Volume (measuring - qt., cup, cc, oz., etc.)
   (d) Rate
   (e) Rate of change
   (f) Angle measurement
   (g) Light
   (h) Heat
   (i) Sound

D. The student will perform, or describe the performance of, tasks involving stationary equipment operation. In so doing, the student will display capabilities indicative of proficiency in the practical applications of operation of motors, operation of driven systems (pumps, generators, etc.), and operation of fluid transfer systems (air, refrigerant, hydraulics, etc.).

1. Stationary equipment

   a. Identify common equipment or machines which are pressure operated or require pressure in various degrees for operation (e.g. pumps, vacuum cleaners, etc.).

   b. Identify the requirements posed by various pressures on the systems in which they are found (e.g. seals, safety valves, etc.).

   c. Associate the pressure characteristics with temperatures and temperature requirements in various common assemblies (e.g. pressure cookers, diesel engines, refrigerators, etc.).

   d. Identify the relationship between pressure and surface area in determining the pressure ratios found in hydraulic systems such as brakes, hydraulic lifts, etc.

   g. Identify drive mechanisms as devices which convert other forms of energy into mechanical motion. These include:

            (1) Piston engines
            (2) Turbines
            (3) Electric motors
            (4) Hydraulic motors
            (5) Rocket
            (6) Jet

h. Identify uses for the various kinds of drive mechanisms.

i. Analyze functions, limitations and advantages of the kinds of drive mechanisms (using mock-up, actual engine, picture, etc.) orally or in writing.

j. Identify fuels, and functions of fuels, advantages, limitations including exhaust residues, efficiencies, etc.

k. Identify basic components of the kinds of drive mechanisms (fuel, regulating devices, ignition, exhaust system).

E. The student will perform, or describe the performance of, tasks involving vehicular operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of vehicular componentry, and behavioral aspects of vehicular operation.

1. Vehicular operations

a. Identify the major components such as power sources, power train, chassis, running gear, etc. which make vehicular motion possible.

b. Identify the controls which make for variation in the speed and direction of vehicular motion.

c. Identify the environmental conditions which affect vehicular motion.

d. Operate a common vehicle (automobile, truck, motorcycle) in accordance with legal limitations or restrictions.

e. Identify by appearance, name and function the following: crane, dragline, back hoe, power shovel, scoop type loaders, dozers, tractors (tracked and wheeled), graders, earth movers, trenchers, crushers, lifting equipment, pavers, pile drivers, and farm machinery.

f. Associate a given unit of large operating equipment with a given task requiring the use of large operating equipment.

g. Operate selected large operating equipment efficiently and safely (e.g. farm equipment).

F. The student will perform, or describe the performance of, tasks involving connection and fitting operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of methods of connection, factors influencing type of fitting used, characteristics of methods of connection, and connection and fitting operations.

1. Connections--fittings and fasteners

a. Identify the types of connections and fastenings (adhesion, cohesion and mechanical connections).

b. Identify the various types of adhesive fasteners including:

(1) Glues and cements
(2) Solders
(3) Tape
(4) Brazing

c. Identify the types of cohesive connections including:

(1) Metallic welds
(2) Ceramic welds
(3) Plastic welds

d. Identify types of mechanical fastenings including:

(1) Threaded fasteners
(2) Nails
(3) Latches and catches

(4) Zippers, buttons, snaps
(5) Etc.

e. Select proper thread according to material and application (select machine or wool screw, pipe thread or NF or NC, etc.).

f. Associate the common fasteners such as wood screws and bolt with their abbreviated symbols such as 1½" x 10 FH-W.S. or ¼" x 20 x 3" NC M.S.

g. Given a situation requiring sealing against pressure at volume loss, the student will select appropriate gasket, washer, packing, etc.

h. Select appropriate high or low temperature solder according to the composition and application required by the job.

i. Select proper mounting components (spring, pad, solid) and procedures given a situation in which some mechanical mounting is required.

k. Associate proper mounting techniques and components with the characteristics and function of the equipment to be mounted.

l. Given a situation requiring mounting the student will select proper mounting taking into account factors such as vibration, rigidity, alignment, etc.

m. The student will demonstrate methods of reducing unwanted vibration (springs, pads, balancing, etc.).

G. The student will perform, or describe the performance of, tasks involving fluid system operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of basic principles of fluid systems--Pascal's principles and the gas laws, fluid system components, and application of fluid systems.

1. Fluid systems

a. Identify the necessary or commonly used components of a hydraulic system. They include the following:

   (1) Fluid system
   (2) Fluid storage
   (3) Valve system
   (4) Piston
   (5) Cylinder
   (6) Sealing components
   (7) External linkages
   (8) Pump

b. Demonstrate by performing a task the function of each of these components in a hydraulic system.

c. Show by performing a task, three uses of hydraulic systems, such as the following:

   (1) Brake system
   (2) Lift system
   (3) Door closer
   (4) Hydraulic jack
   (5) Power steering

d. Identify the forces acting on an object moving through a fluid, (e.g. water, air).

e. Identify examples of aerodynamics design in every day life--cars, boats, buildings, etc.

f. Design or construct an object which will either facilitate or retard motion through a fluid to demonstrate aerodynamic principles.

g. Identify and state examples of three states of matter.

h. Associate temperature variations with states of matter (e.g. loss of heat during condensation, gain in temperature in liquefying solids, etc.).

i. Associate the relationship of pressure and heat with various practical applications (e.g. refrigerators, diesel engines, etc.).

j. Associate valves with the concept of regulation of flow, pressure and temperature in fluid systems.

k. Identify the various types of valves which are employed in regulating fluid systems (e.g. gate valves, glove valves, etc.).

l. Associate various types of valves with given fluid regulation functions.

m. Identify the various parts of valves by their appearance, characteristics and functions.

n. Select appropriate valves for given fluid regulation requirements.

o. Associate the need for safety devices with the characteristics of fluid systems.

p. Associate the need for thermostats as controlling devices with the characteristics and functions of fluid systems.

q. Identify various types of safety devices employed in fluid systems.

r. Differentiate between safety devices by appearance characteristics, and functions.

s. Identify the operation of a thermostat as a function to temperature variation.

t. Select appropriate safety devices given the characteristics of a fluid system (e.g. high pressure, high temperature, caustic content, etc.).

u. Identify filtering processes according to type (mechanical, chemical, electrical, etc.) and function(purification, separation, etc.).

v. Demonstrate by constructing or doing a task which uses the filtering principle, either water or air or other fluid.

II. Electrical Principles

The student will perform, or describe the performance of tasks drawn from the electrical principles section of the domain of general vocational capabilities.

A. The student will perform, or describe the performance of, tasks involving electrical principles. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

   1. Basic principles of electrical flow
   2. Electrical codes and symbols
   3. Electrical circuitry
   4. Production (storage of electricity)
   5. Electrical components (switches, lights, wiring, etc.)
   6. Conductors and insulators (see safety section)
   7. Electrical tests

B. The student will perform, or describe the performance of tasks involving electronics principles. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

   1. Electronic codes and symbols
   2. Electronic circuitry
   3. In-circuit functions of electronic components
   4. Measures and tests for electronic circuits

C. The student will perform, or describe the performance of, tasks involving electromechanical principles. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

1. Relationship between magnetism and electricity
2. Motors, generators, solenoids, and relays
3. Electro-mechanical symbols

D. The student will perform, or describe the performance of, tasks involving principles of electrical safety. In so doing, the student will display capabilities indicative of proficiency in the practical applications of use of electrical safety devices, effects of electric shock, insulators, and conductors, wiring and overloads, and nature of electrical fires.

A. The student will perform, or describe the performance of, tasks involving electrical principles. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Basic principles of electrical flow.
2. Electrical codes and symbols.
    a. Identify various symbols used in the electrical areas.
    b. Associate electrical symbols with given components, given a chart of electrical symbols and electrical components.
    c. Identify the components represented by symbols on a schematic or building diagram, given a schematic or building diagram.
    d. Draw and label fifteen electrical symbols.
3. Electrical circuits (functional and physical characteristics)
    a. Identify the structure or makeup of an electrical circuit, given examples of circuits and structures which are not circuits.
    b. Differentiate between series, parallel and series/parallel circuits, given examples of each.
    c. Differentiate between open, closed and short-circuits, given examples of each.
    d. Differentiate between series, parallel and series/parallel circuits in terms of the electrical values at various points in the circuits, given ohms, Kirchoff's Laws.
    e. Construct a series circuit given a diagram of the circuit, tools and materials.
    f. Construct a parallel circuit, given a diagram of the circuit, tools and materials.
    g. Construct a series/parallel circuit given tools, diagram of the circuit and materials.

h. Select the appropriate circuit, given specific electrical requirements (e.g. when one light goes off, the rest must stay on).

4. Production of power

   a. Identify various sources of electrical energy including:

      (1) Chemical sources (batteries-fuel cells)
      (2) Mechanical sources (generators)
      (3) Heat sources (thermocouples)
      (4) Pieze-electric (crystal compression)
      (5) Other (solar batteries, nuclear energy)

   b. Associate a given source of energy with a given common electrical energy used (e.g. batteries with ignition systems, generators with AC fuses, etc.).

   c. Differentiate between sources of energy in terms of their electrical characteristics such as voltage, current and power ratings.

   d. Select a source of energy given a common electrical device requiring electrical power for operation.

5. Electrical components (functions and characteristics)

   a. Identify various electrical components by name, characteristics and functions given a variety of electrical components. Electrical components include:

      (1) Switches
      (2) Relays
      (3) Fuses
      (4) Rheostats
      (5) Circuit breakers
      (6) Receptacles
      (7) Light fixtures
      (8) Insulators
      (9) Capacitors
      (10) Transformers
      (11) Resistors
      (12) Flourescent lights
      (13) Armored cable
      (14) BX cable
      (15) Conduit
      (16) Arc Welders

  b. Associate electrical values (ohms, amperes, volts, watts, etc.) with given component functions (e.g. resistors with ohms, fuses with amperes, etc.).
  c. Associate electrical components with various common applications. (Rheostats with light dimmers and motor speed control)
  d. Associate installation procedures with various components, given installation and safety requirements.
  e. Associate removal and replacement procedures with various electrical components given removal and replacement procedures.
  f. Associate safety requirements with various electrical components given the hazards they pose to the individual working with them.
  g. Select appropriate components given specific requirements (e.g. switch to turn light on and off).

6. Conductors and insulators (see safety section)
7. Electrical tests
  a. State the need for making electrical tests, given information regarding electrical circuitry and its characteristics.
  b. Identify the various tests which can be performed on electrical circuits, given the characteristics of these circuits (e.g. test amperage, voltage, resistance, power, voltage, drops, etc.).
  c. Identify various electrical testing instruments by appearance and function, given a variety of testing instruments.
  d. Associate given electrical testing instruments (voltmeter, watt meter, Wheatstone Bridge, etc.) with given electrical testing requirements (power, resistance, etc.).
  e. Associate a testing procedure with the appropriate testing instrument, given the testing instrument and testing requirements.

f. Test a circuit for continuity, given a circuit, continuity, tester and power source.

g. Execute or list the procedure for testing for resistance, voltage, current, and power, given a variety of circuits and test instruments.

h. Differentiate between good and defective circuits and components, given circuit or component specifications and the readings on testing instruments.

i. Identify the safety procedures required when performing electrical tests, given various testing situations.

B. The student will perform, or describe the performance of tasks involving electronics principles. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Electronic Codes and Symbols

    a. Identify electronic symbols by name given a variety of symbols.

    b. Associate electronic symbols with a electronic components given a chart of electronic symbols and variety of electronic components.

    c. Identify the quantity and types of components required for an electronic assembly from a schematic diagram.

    d. Trace a circuit on a schematic diagram, given a diagram or schematic.

    e. Draw and label fifteen electronic symbols.

    f. Draw a schematic diagram of an electronic assembly, given the assembly, pencil and paper.

2. Electrical circuitry

    a. Associate the need for electronic circuits with the functioning of electronic assemblies (e.g. circuits are needed for radios, TVs, record player, computers, etc.)

    b. Differentiate between wired and printed circuits by their advantages and disadvantages over each other, given samples of each.

    c. Identify the tools and materials required for assembly of electronic circuits by their appearance and function, including:

        (1) Wire cutters
        (2) Wire strippers
        (3) Wrenches
        (4) Screwdrivers
        (5) Soldering irons or guns

(6) Drills
(7) Reamers
(8) Crimping tools
(9) Pliers
(10) Solder
(11) Heat sinks
(12) Soldering aid
(13) Hardware (screws, bolts, etc.)
(14) Wiring

d. Associate tools with specified assembly procedures, given a circuit to be assembled.

e. Assemble an electronic circuit, given the necessary tools, materials and procedures.

f. Differentiate between series, parallel, and series/parallel circuits, given examples of each.

g. Identify the advantages and disadvantages of series, parallel and series/parallel circuits, given examples of each.

h. Trace a circuit, given a circuit assembly.

i. Associate a specific circuit with its function (e.g. power supply, amplifier, etc.).

3. Electronic components

a. Identify various electronic components by their appearance and functions, including:

(1) Resistors
(2) Capacitors
(3) Vacuum tubes
(4) Transistors
(5) Transformers
(6) Potentiometers and rheostats
(7) Induction coils
(8) Switches
(9) Antennas
(10) Cathode ray tubes
(11) Fuses
(12) Relays
(13) Tube sockets
(14) Diodes (crystals)
(15) Speakers
(16) Microphones
(17) Earphones

b. Identify electronic components as integral parts of electronic assemblies designed to perform specific functions.

c. Differentiate by visual inspection or simple tests between good and defective components, given a variety of components (some good and some defective

d. Identify physical characteristics of electronic components (e.g. fragile, weight, ability to withstand heat, shock, etc.).

e. Associate electronic components with their electrical values and the quantities of their values, given color codes, color code charts and values printed on components (e.g. resistors--10K52; capacitors .005 mfd; etc.).

f. Select appropriate electronic components, given specific requirements for circuit assembly.

4. Measures and tests for electronic circuits

a. Identify measuring instruments required for testing electronic circuits, including:

(1) Ammeters
(2) VTVM
(3) VOM
(4) Oscilloscope
(5) Signal generators
(6) Power supply

b. Identify testing procedures required for testing electronic circuits.

c. Associate electronic testing instruments with electronic testing procedures.

d. Select the appropriate electronic testing instruments, given a situation requiring testing of electronic circuits.

e. State the procedure required to measure electronic circuits, given a circuit requiring testing.

f. Measure given electrical values with appropriate testing equipment, to ± 10% tolerance.

C. The student will perform, or describe the performance of, tasks involving electromechanical principles. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

1. Translating electrical and mechanical energy.
    - a. Identify the relationship between electrical and mechanical energy in electro-mechanical devices.
    - b. State the sequence by which electrical energy is translated into mechanical energy.
    - c. State the sequence by which mechanical energy is converted into electrical energy.
    - d. Associate magnetism with the operation and functioning of electromechanical devices.
    - e. Identify common applications of translating mechanical energy into electrical energy and vice versa.
2. Common electro-mechanical devices and functions
    - a. Identify various electro-mechanical devices by their appearance and functions. Electro-mechanical devices include:
        - (1) Electric motors
        - (2) Generators
        - (3) Solenoids
        - (4) Bells and buzzers
    - b. Identify the operating principles and components of given electro-mechanical devices.
    - c. Associate various electro-mechanical devices with practical applications such as lathes, alarms, automobile starters, etc.
    - d. Remove and replace given parts of electro-mechanical devices (e.g. brushes) given electro-mechanical devices, required tools and replacement parts.

e. Select proper power source and connect a given electro-mechanical device to a power source, given the device and several power sources.

f. Identify the methods of controlling the energy outputs and requirements of electro-mechanical devices, given a variety of control components (switches, rheostats, etc.) and control procedures.

3. Electro-mechanical sumbols

   a. Identify symbols used to represent electro-mechanical devices and their component parts given a chart showing the symbols.

   b. Associate electro-mechanical symbols with appropriate electro-mechanical devices and their component parts given symbols and electro-mechanical devices.

   c. Draw several electro-mechanical symbols with appropriate identification markers (e.g. positive and negative terminals, north/south poles, etc.) given paper, pencil and electro-mechanical devices.

D. The student will perform, or describe the performance of, tasks involving principles of electrical safety. In so doing, the student will display capabilities indicative of proficiency in the practical applications of use of electrical safety devices, effects of electric shock, insulators and conductors, wiring and overloads, and nature of electrical fires.

1. Electrical safety

    a. Identify hazards posed by static electricity. These include:

        (1) Shock
        (2) Ignition of gases
        (3) Burns

    b. Associate "grounding" with dissipation of static electricity.

    c. Associate grounding methods with dissipating of static electricity in various situations (e.g. lightning rods, metal-to-metal contact between gasoline pump nozzle and gasoline fill tube, etc.).

    d. Associate electricity with combustion, given characteristics of electricity and combustible environment (e.g. arcing or electric current igniting flammable materials).

    e. Identify preventive measures available for prevention of combustion as a result of defects in electrical circuits.

    f. Associate electrical shock as a hazard to life, in terms of the voltage/current ratio (e.g. high current is more dangerous than high voltage).

    g. Identify the preventive measures available to reduce shock hazards (e.g. grounding, insulation, etc.).

    h. Associate appropriate measures required to reduce shock hazards with specific hazardous situations (e.g. grounding of an electrical appliance, working on a live circuit with insulated tools, etc.).

i. Identify the danger posed by capacitance in common work and home situations (e.g. electric charges stored by certain components).

j. Identify grounding as a safety measure to be taken to eliminate the hazards of capacitance.

k. Associate the appropriate grounding method with a given capacitance situation (e.g. discharging capacitors with screw driver before removing it).

l. Associate the deterioration of wiring, wiring insulation, and insulators with hazards (in terms of short circuitry, exposed conductors, arcing, etc.).

m. Associate environmental conditions with wire and insulator deterioration (e.g. excess heat, dampness, vibration, mechanical stress, etc.).

n. Identify methods available to prevent wire and insulator deterioration.

o. Select appropriate wire and insulation for a given environmental condition (special insulation for wiring in damp or wet places).

III. Spatial Principles

The student will perform, or describe the performance of, tasks drawn from the spatial principles section of the domain of general vocational capabilities.

A. The student will perform, or describe the performance of, tasks involving structural principles. In so doing, the student will display capabilities which are indicative of proficiency in the practical applications of:

   1. Interpretation of design factors
   2. Stress and loading
   3. Material uses

B. The student will perform, or describe the performance of, tasks involving principles of layout and visualization. In so doing, the student will display capabilities which are indicative of proficiency in the practical applications of:

   1. Techniques of perspective, perception, graphic representation, principles of mechanical drawing.
   2. Drawing codes and symbols
   3. Drawing instruments
   4. Scaling and measuring

A. The student will perform, or describe the performance of, tasks involving structural principles. In so doing, the student will display capabilities which are indicative of proficiency in the practical applications of:

   1. Interpretation of design factors

      a. Given a structure or a picture of a structure such as an item of furniture or building, represent it with a blueprint, scale drawing, etc.

      b. Given a structure or a photograph or picture of a structure, such as a piece of furniture, metal item, or building, identify geometric forms (planes, angles, triangles, circles, squares, etc.) which are employed in its design.

      c. Associate geometric forms with their structural values (e.g. arches, circles, squares, triangles, etc.).

      d. Given pictures, photos, etc., write about geometric forms as they relate to the aesthetic properties of a structure (furniture, metal items, or buildings).

      e. Given pictures, photo, etc., identify the functions of geometric forms used in the structural design (e.g. for efficiency, convenience, strength, aesthetics, etc.).

      f. Analyze a structure in terms of basic structural components and identify them (e.g. footings, foundations, vertical and horizontal bearing members).

      g. Identify placement and size of components in terms of present-day standardization (e.g. standard placement of light switches, standard window and door sizes, standard ceiling height, etc.).

    h. Analyze a structure in terms of local building codes (material quality, compliance with specified wire sizes, plumbing system, etc.).

2. Stress and loading
    a. Given a diagram or a model of a crane, truss, etc., differentiate between the forces to be overcome - tension, load lines, collar ties, compression, boom, wall studs, shears, boom pins, chair seat to rails, torsion, self support.
    b. Construct or design a rigid structure from a non-rigid component such as sheet metal or paper.
    c. Given a structural situation requiring bracing, brace or indicate verbally proper bracing procedure.
    d. Given a compound curved surface, explain verbally why it is more rigid than a plane surface of same area and material.
3. Materials uses
    a. Given an object (boat) which requires weather proofing, select an appropriate finish.
    b. Given an object (fishing rod) which requires a flexible weatherproof surface, select an appropriate finish.
    c. Given a set of conditions (high humidity, low temp., sunlight, etc.) select suitable means of weatherproofing (enclosures, chemical alteration, etc.).
    d. Given examples of weatherproofing, classify these into several group types.
    e. Given samples of various insulating materials, classify them into one or more of the three basic types (radiation, conduction, and convection barriers).

f. Given specific insulation requirements, glazing kiln, ice chest, select appropriate insulation (asbestos, polyurathane foam, etc.).

g. Associate binding, pounding, etc., of metal with the effects of such bending and pounding (stretching, heat production, hardening, etc.).

h. Given a variety of materials, classify them as to malleability.

i. Perform a task which requires bending or molding of a material.

j. Perform a task which requires bending, molding, or flexing, taking into account effects such as shrinkage, stretching, hardening, etc.

B. The student will perform, or describe the performance of, tasks involving principles of layout and visualization. In so doing, the student will display capabilities which are indicative of proficiency in the practical applications of:

1. Perspective perception, graphic representation, and mechanical drawing.

   a. Identify the techniques of translating objects, photographs, and other drawings into line drawings or representations (e.g. drawing a topographical map from aerial photographs).

   b. Identify the accepted standards in presenting an object by means of an orthographic or isometric projection (e.g. identify top, front, side, and bottom views).

   c. Construct (draw) a drawing of an object, photograph or other drawing given the drafting tools, paper and drawing procedures required.

d. Identify the situations or activities which require the use of drawings for their execution or completion (e.g. building a house, machining an object, making a dress, etc.)

e. Associate appropriate drawings.

f. Given descriptions of objects or structures, produce plane drawings which represent such descriptions.

g. Given a geometric representation of a structure (blueprint, scale drawing, etc.) identify points, lines and surfaces.

h. Given a drawing such as a blueprint, scale drawing, etc., identify and describe forms which points, lines and surfaces may take (angles, triangles, squares, circles, etc.).

i. Apply the following geometric theorems given structural situations which call for application of such theorems:

    (1) Bisections (perpendicular and of angles)
    (2) Right triangles
    (3) Angles and sums of angles
    (4) Chords and arcs
    (5) Tangents
    (6) Areas

j. Identify the more common geometrical symbols:

    (1) A = area
    (2) C = circumference
    (3) P = perimeter
    (4) R = radius
    (5) Etc. π = pi

k. Identify the layout procedures used in the construction of drawings, blueprints, and layouts, including:

    (1) Layout on materials from which objects will be constructed
    (2) Patterns or templates used for multiple or mass reproduction

l. Identify various layout tools by appearance and function, including:

    (1) Scribes
    (2) Templates
    (3) Trammel points
    (4) Scratch gauges
    (5) Compasses
    (6) Calipers

m. Given a specific layout assignment, associate appropriate layout tools with given layout procedures (e.g. layout of an allipse on a piece of sheet metal stock).

n. Given a specific layout assignment, layout a given shape with appropriate dimensions (e.g. to layout a 4" x 5" rectangle on a piece of wood).

o. Given a set of components (electrical components, items of furniture, mechanical components, equipment, etc.) arrange in a prescribed space to reflect maximum safety, efficiency, economy.

p. Given a set of items (electrical components, mechanical apparatus, equipment, etc.) supply a space which reflects maximum economy, safety and efficiency.

q. Given a set of items (furniture, pictures, foods, flowers) arrange aesthetically.

r. Given a set of items (electrical, mechanical, etc.) arrange items in a space or supply a space which reflects tolerance requirements of the items (e.g. shafts and bearings, power equipment, miniature elec. component, etc.).

s. Suit space to fit components with properties like heat, electrical charge, expansion, friction.

t. Identify various solid figures (spheres, cubes, cones, etc.) with their functions (curved surface for pressure, for maximum or minimum surface area).

u. Identify size of exterior surface areas with effects (heat loss, strength, etc.) relative to interior surface areas.

v. Identify shape of container with volume of container (e.g. 2" pipe vs. 4" pipe; cube vs. sphere, etc.).

w. Position tools and equipment in an area to reflect maximum safety precautions, efficiency and convenience given a specified room configuration, power outlets, etc.

x. Given a variety of tools, classify or arrange as to function in a "rough to fine" structural sequence.

y. Given a set of tools (power and hand), identify those which are generally used for "rough" work and those which are used for "fine" work.

z. Given a set of tools, indicate space requirements of each (either by actual placement, diagram, or verbal description) for example:

(1) Space fore and aft for circular saw
(2) Space l to r for radial arm saw
(3) Space for planers, jointers
(4) Space for lathes
(5) Space for welding, cutting equipment
(6) Space for hand tool usage (work stations), etc.

2. Drawing codes and symbols

a. Identify the labeling procedures and techniques used in construction of drawings, blueprints, and maps (e.g. type of print, location of labels, etc.

b. Identify the techniques of showing dimensions on drawings, blueprints and maps (e.g. use of arrows, elimination of redundant dimensions, etc.).

c. Label a drawing in accordance with accepted standards including:

(1) Use of dimension lines
(2) Use of a reference point or line
(3) Arrows
(4) Using the fewest number of dimensions possible

d. Dimension a drawing in accordance with accepted standards, including:

   (1) Use of dimension lines
   (2) Use of a reference point or line
   (3) Arrows
   (4) Using the fewest number of dimensions possible

3. Instruments

   a. Identify various drawing tools by their appearance and function including:

      (1) 2A and 4A pencils
      (2) T-square
      (3) Triangles (45°/90°, 30°, 60°, 90°)
      (4) French curve
      (5) Templates
      (6) Compasses (Bow pencils)
      (7) Scaling rules
      (8) Dividers
      (9) Ruling pens
      (10) Protractors

   b. Identify drawing procedures used in making mechanical drawings, blueprints, plans, etc., including drawing of:

      (1) Construction lines
      (2) Dimension lines
      (3) Object lines
      (4) Positions of views
      (5) Symbols
      (6) Orthographic projections
      (7) Isometric projections
      (8) Hidden lines
      (9) Center lines
      (10) Perspectives

   c. Associate appropriate drawing tools with drawing procedures, given a variety of drawing tools and procedures.

   d. Select appropriate drawing tools and procedures given a specific drawing assignment (e.g. construct an isometric drawing of a cubic object.)

   e. Construct (draw) an orthographic projection of a given object, given drawing tools, paper, drawing board and procedures

f. Construct (draw) an isometric projection of a given object, given drawing tools, paper, drawing board and procedures.

4. Scaling and measuring

   a. Identify various scaling and measuring instruments by appearance and functions, including:

      (1) Dividers
      (2) Protractors
      (3) Scaling rules
      (4) Calipers (vernier & micrometic)

   b. Identify scaling procedures used in the contraction of drawings.

   c. Associate appropriate scaling tools with given scaling procedures.

   d. Reduce or increase the size of an object using scaling instruments and procedures.

   e. Identify the various situations in which scaling is used (e.g. drawings, maps, layouts, plot plans, photographs, etc.)

   f. Identify the measuring procedures used in the construction of drawings, blueprints, etc.

   g. Associate appropriate measuring instruments with given measuring techniques (e.g. using dividers to transfer dimensions).

   h. Measure the dimensions on a drawing given measurement tools and procedures (measurements must be exact).

IV. Chemical and Biological Principles

The student will perform, or describe the performance of, tasks drawn from the chemical/biological principles of the domain of of general vocational capabilities. (Basic source of content lies in vocational agriculture materials.)

A. The student will perform, or describe the performance of, tasks involving principles of materials usage. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Physical and chemical properties of materials (organic and inorganic).
2. Effects of various environmental conditions on molecules (organic and inorganic).

B. The student will perform, or describe the performance of, tasks involving principles of chemistry. In so doing, the student will display capabilities indicative of proficiency in the practical applications of simple reactions, nature of chemical compounds, periodic table, important chemical processes, applications of chemical processes, chemistry in industry, and chemistry in the household.

C. The student will perform, or describe the performance of, tasks involving principles and techniques of foods, use and cooking. In so doing, the student will display capabilities of vitamin and mineral content of foodstuffs, caloric content of foodstuffs, types of foods, and preparation of foods.

D. The student will perform, or describe the performance of, tasks involving principles of biological systems. In so doing, the student will display capabilities indicative of proficiency in the practical application of make-up of cells, tissues, organs, classification of organisms, evolution, ecology, nitrogen cycle, photosynthesis, and diffusion.

E. The student will perform, or describe the performance of, tasks involving principles of medicine and first aid.

    1. Treatment of minor injuries

    2. Medical tests and medical terminology

A. The student will perform, or describe the performance of, tasks involving principles of materials usage. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Materials

   a. Characteristics, properties, and uses of common materials.

      (1) Identify (list) 25 common materials used in industry, including:

         (a) Steel
         (b) Rubber
         (c) Aluminum
         (d) Copper
         (e) Wood
         (f) Glass
         (g) Plastics
         (h) Brass
         (i) Lead
         (j) Silver
         (k) Clay (brick)
         (l) Cement
         (m) Cotton
         (n) Wool
         (o) Leather
         (p) Carbon
         (q) Stone (granite, sandstone, etc.)
         (r) Mercury
         (s) Gold
         (t) Petroleum
         (u) Porcelain
         (v) Chromium
         (w) Paper
         (x) Synthetics (nylon, dacron, etc.)
         (y) Fats (glycerin, lanolin, etc.)

      (2) Associate various physical properties with given common materials (e.g. hardness, strength and weight with steel; malleability with gold; ductility with copper and silver, etc.).

      (3) Associate various chemical properties with given common materials (e.g. aluminum corroding but not rusting; chromium resisting rust; copper oxidizing rapidly, etc.).

      (4) Associate various common materials, given specific requirements of the finished product (e.g. a rust-resting, lightweight auto trim assembly can be made of aluminum, rubber can be used as a water proofing agent, etc.).

      (5) Associate various surface characteristics with given materials (e.g. hardness and smoothness with machined steel; softness with white pine, porosity with cement blocks, etc.).

      (6) Identify various surface coverings available for common materials (e.g. varnishes, enamels, oxides, etc.).

      (7) Associate appropriate surface coverings with given common materials.

      (8) Select an appropriate surface covering given the characteristics required for a particular surface (e.g. shellac for wood, enamel for sheet metal. anodizing of aluminum, copper plating, etc.)

2. Effects of various environmental conditions on molecules (organic and inorganic).
   a. Identify various materials which may be easily damaged.
   b. Identify the various methods by which materials can be damaged (e.g. heat, cold, stress, tension, etc.).
   c. Associate a given material with the method by which it can be easily damaged (e.g. glass by high heat; certain plastics by tension, wood by heat, etc.).
   d. Identify the procedures required to prevent or minimize damage to materials (e.g. insulation, tempering, etc.).
   e. Associate the appropriate procedure(s) required to prevent or minimize damage to materials with a given material (e.g. tempering glass, insulating wood, etc.).

B. The student will perform, or describe the performance of, tasks involving principles of chemistry. In so doing, the student will display capabilities indicative of proficiency in the practical applications of simple reactions, nature of chemical compounds, periodic table, important chemical processes, applications of chemical processes, chemistry in industry, and chemistry in the household.

1. Chemical components and reactions
   a. Identify combustion as a rapid oxidation process requiring fuel, kindling, temperature, and oxygen.
   b. Associate fuel, temperature, and oxygen requirements with given types of combustion (e.g. gas welding requires acetylene as a fuel, high temperatures, and large amounts of oxygen).
   c. Associate the rapidity of oxidation with production of heat (or combustion) e.g. the faster the oxidation the higher the heat-rusting.

d. Identify combustion as a source of energy (mechanical, thermal, electrical).

e. Identify the procedures used in creating products and reactions in laboratories and industrial plants (e.g. sublimation, polymerization, titration, etc.).

f. Associate appropriate chemical procedures with given chemical products (e.g. plastics with polymerization).

g. Identify the equipment used to carry out chemical procedures and processes in laboratories and industrial plants (e.g. stills, flasks, tubing, centrifuges, agitators, etc.).

h. Associate appropriate chemical equipment with chemical procedures and processes (e.g. distillation equipment for cracking petroleum).

i. Associate laboratory equipment (as a model) with chemical industrial equipment (e.g. distillation using flask and test tubes as a prototype of large industrial distillation equipment).

j. Identify common reactants found in industry including:

(1) Sulfuric acid
(2) Chlorine
(3) Carbon compounds
(4) Hydrochloric acid
(5) Calcium compounds
(6) Oxidizers
(7) Bases
(8) Catalysts

k. Identify various common chemical reactions used in industry to produce various products, including:

(1) Etching
(2) Photographic processing
(3) Tanning of leather
(4) Electroplating

(5) Lumber treating
(6) Battery reactions (wet and dry)
(7) Neutralizing of acids and bases
(8) Yeast action
(9) Amalgamation
(10) Litmus papers

l. Identify the results of common reactions used in industry and laboratories (e.g. etching will leave a design of some sort on the base material; litmus paper will turn color in the presence of acids and bases).

m. Classify given reactions as beneficial--useful/harmful, endothermic/exothermic, safe/dangerous, rapid/slow (e.g. reaction in wet cell is useful; certain fermentation is harmful; electroplating is safe; distillation of petroleum is dangerous).

n. Identify catalysts used to begin and sustain common chemical reactions (such as acids used in epoxy cement; platinum in petroleum cracking, etc.).

o. Identify the chemicals used as cleaning agents (e.g. ammonia, carbon tetrachloride, kerosene, gunk, turpentine, etc.).

p. Associate appropriate chemical cleaners with given situations requiring their use (e.g. turpentine with cleaning paint, gunk with cleaning greasy components).

q. Associate the safety procedures with the use of given chemical cleaners (e.g. carbon tetrachloride is toxic, kerosene is volatile).

r. Identify the reactions by which chemical cleaners perform cleaning operations (e.g. dissolving, congulating, thinning, etc.)

s. Identify the common fuels used in the production of heat energy, including:

(1) Oil
(2) Gasoline
(3) Kerosene
(4) Wood
(5) Natural gas
(6) Propane
(7) Butane
(8) Acetylene

t. Identify the chemical changes resulting in materials under going combustion (e.g. production of ashes/carbon/release of hydrocarbons, etc.).

u. Identify heat or temperature rise as an acceleration of the movement of atoms.

v. Associate kindling temperatures with various fuels and materials.

w. Identify the effects of combustion on various materials (e.g. plastics melt, powders explode).

x. Associate the combustibility of various materials with their physical configurations (e.g. shape, density, size/powders, granules, pellets, etc.) and moisture content.

y. Identify non-oxidizing combustion processes (e.g. fusion and fusion processes).

C. The student will perform, or describe the performance of, tasks involving principles and techniques of foods, use and cooking. In so doing, the student will display capabilities of vitamin and mineral content of foodstuffs, caloric content of foodstuffs, types of foods and preparation of foods.

a. Identify foods as fuels or sources of energy for the body.

b. Associate foods with body functions (e.g. nutrition, body building and cell maintenance, regulation or depression of body functions).

c. Identify the chemical elements and compounds which make up the basic food groups, including:

(1) Carbohydrates
(2) Proteins
(3) Fats
(4) Vitamins
(5) Minerals

d. Associate food chemicals with their common food sources (e.g. meat provides protein; bread and potatoes, carbohydrates; fruits and vegetables, vitamins; milk, fats; liver, minerals).

e. Identify the nutritional requirements of the body (e.g. balanced diet and special requirements such as salt, iodine, etc.).

f. Select foods which will provide given nutritional requirements.

g. Identify various body illnesses and deficiencies resulting from inadequate nutrition including:

(1) Rickets
(2) Scurvy
(3) Malnutrition
(4) Pellagra
(5) Anemia

h. Associate body deficiencies or illnesses with inadequate intakes of specific nutrients (e.g. lack of Vitamin C with scurvy; Vitamin A with nightblindness, etc.).

i. Differentiate between diets as normally nutritional or correctional (weight, vitamin deficiency, etc.).

j. Identify the food elements which are required to maintain body functions, including:

(1) Calories
(2) Vitamins
(3) Carbohydrates
(4) Starches
(5) Proteins
(6) Trace elements

k. Identify those foods which provide the elements required to maintain body functions (e.g. those which make up a balanced diet).

l. Identify those situations which require corrective diets including:

(1) Vitamin deficiency
(2) Diabetes
(3) Hormone deficiency
(4) Malnutrition
(5) Obesity

m. Identify those foods or food elements which make up corrective diets (high protein foods such as wheat germ, vitamin concentrates, polyunsaturates, salt substitutes, etc.).

n. Associate appropriate foods or food elements with given corrective diets (e.g. sugar substitutes for diabetics, vitamin supplements for pellagra, etc.).

o. Classify foods into the following categories:

(1) Cereals
(2) Meats
(3) Fish and mollusks
(4) Dairy
(5) Poultry
(6) Green vegetables
(7) Leafy vegetables
(8) Fruits and nuts
(9) Beverages
(10) Condiments and flavorings
(11) Specialty or exotic foods (caviar)

p. Identify the ingredients which make up various food dishes or preparations (e.g. the makeup of bread, soups, stews, meat loaves, puddings, pastries, etc.).

q. Associate appropriate ingredients and their blending with given specific end results (e.g. baked cakes require various ingredients and preparation sequences).

r. Select appropriate condiments given specific taste requirements.

s. Associate the characteristics of beverages such as temperatures, consistency, etc., with accepted standards (e.g. coffee is usually served hot or cold, with cream and/or sweetener, or black).

t. Select an appropriate variety of foods given the main course (or food) requirements (e.g. selection of appetizers, salads, beverages, and desserts).

u. Identify cooking times for various foods including the degrees of cooking of the foods (e.g. time required to prepare a rare, medium or well done steak).

v. Identify the various preparation procedures required before foods can be cooked (e.g. peeling, dicing, paring, etc.).

w. Associate appropriate preparation procedures with the preparation of given foods (e.g. scaling or filleting with fish, peeling with potatoes, etc.).

x. Identify spices, foods auxiliaries and condiments used in cooking including:

(1) Salt
(2) Pepper
(3) Oregano
(4) Sage
(5) Parsley
(6) Cinnamon
(7) Vanilla
(8) Lime
(9) Rosemary
(10) Allspice
(11) Meat tenderizers
(12) Sauces
(13) Flavoring

y. Identify the sequences required to cook various foods including:

(1) Basting
(2) Par-boiling
(3) Marinating
(4) Baking
(5) Frying
(6) Broiling

z. Associate the cooking sequence with given foods and cooking requirements (e.g. broiling a steak; baking, frying or cooking potatoes, etc.).

aa. Select a preparation method which will meet given taste and consistency requirements (e.g. crispness requires baking or broiling, creamy consistency requires boiling, etc.).

bb. Schedule the preparation of various foods given a complete meal requirement (e.g. preparing foods which have long cooking requirements first, those that need least cooking last, etc.).

cc. Identify sanitation requirements necessary for foods preparation, including:

(1) Bacteria free cooking vessels and utensils
(2) Vegetables well cleaned
(3) Adequately refrigerated foods
(4) Area free of vermin
(5) Personnel free of illnesses or communicable diseases
(6) Personal hygiene of food preparers

dd. Identify those agents or situations which pose sanitation problems in the preparation of foods, including:

(1) Bacteria
(2) Clogged drains
(3) Hard to clean areas
(4) Accumulation of wastes
(5) Highly perishable foods
(6) Vermin

ee. Identify those procedures required to maintain adequate sanitary conditions including:

(1) Washing
(2) Disinfecting
(3) Sterilization

ff. Associate appropriate sanitation procedures with given sanitation requirements (e.g. disinfection eliminates bacteria).

gg. Select appropriate sanitation procedures and agents given a sanitation problem (e.g. sterilization of dishes in a cafeteria).

D. The student will perform, or describe the performance of, tasks involving principles of biological systems. In so doing, the student will display capabilities indicative of proficiency in the practical application of make-up of cells, tissues, organs, classification of organisms, evolution, ecology, nitrogen cycle, photosynthesis, and diffusion.

a. Identify the ecological requirements of various organisms, including:

(1) Food and food chain
(2) Temperatures
(3) Humidity
(4) Terrain features
(5) Space or freedom of movement
(6) Freedom from toxic substances
(7) Adequate oxygen supply
(8) Water supplies
(9) Lumnological requirements (movement, light, temperature requirement)

b. Associate specific ecological requirements with specific organisms (e.g. otters with swamplands, fast cold running streams with trout, etc.).

c. Identify the earth as an ecological system in which alteration of one or more components has far-reaching implications or effects on other components (e.g. cutting down of forests affect the watersheds and the flora and fauna of the area).

d. Associate man as a participant in the ecological system rather than a mere consumer of the environment (e.g. water used by industry must be returned to its source in a state most closely approaching its natural condition).

e. Associate ecological systems with nitrogen, carbon dioxide, and water cycles.

f. Identify the interrelationships of various plants and animals in an ecological system (e.g. beaver dam provides the ecological base for other plant and animal life which could not be there otherwise).

g. Identify the agents which may upset an ecological system including:

(1) Pollution (Organic and inorganic)
(2) Overgrazing
(3) Indiscriminate lumbering practices
(4) Congested building of homes, factories, roads, cities
(5) Depletion of surface and ground water
(6) Noise generation
(7) Elimination of fauna and flora species
(8) Indiscriminate use of pesticides, herbicides
(9) Improper soil conservation practices

h. Identify the population of a given area as an important factor affecting the ecology of that area (e.g. high population density increases waste production, destroys surrounding ecologies, increases "one way" consumption).

i. Identify the effects of common chemicals on biological systems or organisms, including the effects of:

(1) Acids
(2) Gases (carbon monoxide, sulfur dioxide)
(3) Bases
(4) Fluorine compounds
(5) Lead and lead compounds
(6) Chlorinated hydrocarbons

j. Identify the effects of temperature and moisture on biological systems or organisms.

k. Identify the defense mechanisms available to organisms to cope with changes in the environment, including:

(1) Mutation
(2) Migration
(3) Accomodation
(4) Alteration of an environment

E. The student will perform, or describe the performance of, tasks involving principles of medicine and first aid.

1. Treatment of minor injuries

   a. Identify those medical treatment procedures which are included in the category of first aid treatment (e.g. artificial respiration, stopping of bleeding, treating minor burns, treating bone fractures, etc.).

   b. Identify the important or critical procedures required when administering first aid (e.g. keeping the patient warm, moving patients as little as possible, etc.).

   c. Identify the procedures required to administer various first aid treatments (e.g. pressure on specific body points to stop bleeding, mouth-to-mouth resuscitation, etc.).

   d. Associate appropriate first aid treatments with given illnesses or injuries (e.g. splints on fractured limbs, applying antiseptics on cuts, etc.).

   e. Select an appropriate first aid treatment given medical illnesses or injury.

   f. Demonstrate various first aid procedures, including:

      (1) Artificial respiration
      (2) Stopping bleeding
      (3) Treating burns
      (4) Treating for shock
      (5) Exposure to cold or heat
      (6) Treating for poisons
      (7) Treating fractures

2. Medical tests and terminology

   a. Identify the common medical laboratory tests performed in hospitals or medical laboratories, including:

      (1) Blood typing and hemoglobin counts
      (2) Urinanalysis
      (3) Wasserman test

        (4) Cytology tests
        (5) Bacteriology tests
        (6) Pulse rates
        (7) Heart beat
        (8) Test for cancer (pap smears)
        (9) Blood pressure

    b. Associate medical tests with the diseases or illnesses they may detect (e.g. urinalysis may detect diabetes, hemoglobin counts may detect anemia).

    c. Identify common biological tests and as bacteriological, soil tests, plant diseases, parasitology, virology, etc.

    d. Identify the instruments and equipment used to perform medical and biological tests (e.g. centrifuges, glass slides, microscopes, stethescope, scapels, medicine droppers, etc.).

    e. Associate appropriate instruments and equipment with a given medical or biological test (e.g. stethescope with pulse rate, centrifuge with urinalysis).

3. X-Ray and fluoroscope technology

    a. Identify the purposes of X-ray and fluoroscope; tests (e.g. to detect fractures in bones; positions of body organs, etc.).

    b. Differentiate between the characteristics and purposes of fluoroscope and X-ray tests (e.g. fluoroscopes use a screen to permit direct observation, X-rays are usually developed on film).

    c. Identify the major processes of fluoroscopy and X-ray tests (e.g. procedures required to make an X-ray).

    d. Identify the major components of a fluoroscopy apparatus (e.g. screen, X-ray tube, etc.).

    e. Identify the major components of an X-ray apparatus (X-ray tube, film carriers, film developing).

    f. Select the appropriate apparatus (fluoroscope vs. X-ray) given specific medical test requirements (e.g. fractured bone X-ray).

4. Sterilization
    a. Differentiate between sterile and septic objects and environments (e.g. operating room vs. stock yard).
    b. Identify the characteristics of sterile objects and environments (e.g. free from bacteria, viruses and other pathogens).
    c. Identify the characteristics of septic objects and environments (e.g. containing varied amounts of apthogenic organisms, viruses, and inorganic substances).
    d. Identify the methods by which relative levels of sterilization can be achieved (e.g. heat, antiseptics, cold, antibiotics, filtration).
    e. Select an appropriate sterilization procedure, given a situation reflecting specific septic characteristics.
    f. Associate the hazards posed by various sterilization procedures (e.g. excess of antibiotics may be very harmful).
    g. Identify the safety precautions required when using given sterilization procedures.
    h. Select the appropriate safety precautions given a specific sterilization procedure.

V. Numerical Operations

The student will perform, or describe the performance of, tasks involving the numerical operations section of the domain of general vocational capabilities.

A. The student will perform, or describe the performance of, tasks involving arithmetic conventions. In so doing, the student will display capabilities indicative of proficiency in the practical application of these conventions.

1. Basic arithmetic operations
2. Decimals, percentage, proportion
3. Fractions
4. Lengths
5. Angles
6. Graphs
7. Signed Numbers
8. Identify and use at least two base numbering systems

B. The student will perform, or describe the performance of, tasks involving basic appropriate computer operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Computer-related operations
2. Functions of computers
3. Computer terminology
4. Types of computers

C. The student will perform, or describe the performance of, tasks involving money management. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

1. Using checking accounts
2. Using savings accounts
3. Using loan services
4. Calculating interest rates
5. Installment buying
6. Mortgages
7. Credit accounts
8. Investments (mutual funds, stocks, bonds)
9. Income

D. The student will perform, or describe the performance of, tasks involving principles and operations of insurance. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

    1. Types of insurance (life, liability, auto, health, social security-retirement) and assets and liabilities of different types of insurance.

A. The student will perform, or describe the performance of, tasks involving arithmetic conventions. In so doing, the student will display capabilities indicative of proficiency in the practical application of these conventions.

1. Basic arithmetic operations
    a. Addition - Add a single or multiple column of numbers
    b. Subtraction - Subtract single or multiple columns
    c. Multiplication - Multiply single or multiple digits
    d. Division - Divide on a short or long division basis with single or multiple digits
2. Decimals, percentage, proportion
    a. Write decimal point under decimal point, tenths under tenths, etc.
    b. In multiplying point off as many decimal places in the product, counting from right to left, as there are in the multiplier and the multiplicand together.
    c. In dividing a decimal by a whole number, write the decimal point for the quotient directly above the point in the dividend before dividing.
    d. In rounding off a decimal, if the figure to be dropped is five or greater add 1 to the figure before it; if the figure which is dropped is less than 5, the figure before it remains the same.
    e. Find what per cent one number is of another, find what fractional part one number is of the other.
    f. Find a per cent of a number.
    g. Change a decimal to a per cent.
    h. Demonstrate that in any proportion, the cross products are equal; that is, in any proportion the product of the outer

terms (the extremes) equals the product of the inner terms (the means).

   i. Demonstrate an equation is a mathematical sentence which is neither true nor false.
   j. Recognize that when you add or subtract the same number from each side of an equation, the new equation has the same root as the first equation.
   k. Recognize that when you divide or multiply each side of an equation by the same number other than zero, the new equation has the same root as the first equation.

3. Fractions
   a. Identify the following fraction terms:
      (1) Denominator
      (2) Numerator
      (3) Terms
      (4) A proper fraction
      (5) An Improper fraction
   b. Identify mixed numbers.
   c. Change a mixed number to an improper fraction.
   d. Change an improper fraction to a whole number or to a mixed number.
   e. Find the lowest common denominator.
   f. Add and subtract fractions or mixed numbers.
   g. Multiply fractions.
   h. Divide fractions.
4. Lengths
   a. Identify the linear units of measure, standard and metric units.

  - b. Identify three instruments used in measuring lengths.
  - c. Define a perimeter as well as compute one in a given situation.

5. Angles
  - a. Describe an angle.
  - b. Draw right, straight, acute, obtuse, reflex, and round angles.
  - c. Measure the degree of any angle.
  - d. Identify a protractor.

6. Graphs
  - a. Identify the following features of a bar graph:
    - (1) The title
    - (2) The meaning of the scale reading across
    - (3) The meaning of the scale reading up and down
    - (4) The rectangular bars, drawn to scale
    - (5) The spaces between the bars
  - b. Find the arithmetic mean of several numbers.
  - c. Compute the median of a group of numbers.
  - d. Identify a line graph.
  - e. Identify a picture graph.

7. Signed numbers
  - a. Add two numbers with unlike signs.
  - b. Subtract two signed numbers.

8. Identify and use at least two base numbering systems.

B. The student will perform, or describe the performance of, tasks involving basic appropriate computer operations. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Computer-related operations
  - a. Identify the following computer-related operations:
    - (1) Abstract sciences

(2) Applied science
(3) Technology
(4) Applied mathematics
(5) Computer science
(6) Information science
(7) Engineering
(8) Numerical analysis
(9) Communications science
(10) Information systems science
(11) Systems engineering
(12) Information processing science
(13) Systems utilization
(14) Systems analysis
(15) Systems design

2. Functions of computers

a. List the following primary functions of computers:

(1) Any numerical application
(2) Numerical weather prediction
(3) Automatic translation of languages
(4) Space exploration control

3. Computer terminology

a. List and describe the following basic vocabulary used in computer programming:

(1) Program
(2) Data
(3) Software
(4) Hardware
(5) Input
(6) Output
(7) FORTRAN, ALGOL, COBOL
(8) Key-punch
(9) Automation
(10) Code
(11) Computer
(12) Mark sensing
(13) Memory
(14) Programmer
(15) Run

4. Types of computers

a. Identify the following types of computers:

(1) IBM 360
(2) GE 235
(3) DATANET-30
(4) DEC PDP-6
(5) SDS-940
(6) UNIVAC 491
(7) BURROUGHS 205
(8) RCA-501

C. The student will perform, or describe the performance of, tasks involving money management. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

1. Checking accounts

   a. Identify a bank check.

   b. Identify two advantages of a checking account

      (1) Unnecessary to keep large sums of money on hand
      (2) Avoid danger of loss of money by fire or theft
      (3) Convenient and safe way to pay bills
      (4) Convenient way to send money through the mail

   c. Identify the necessary steps in starting a checking account.

      (1) Fill out a signature card which is supplied by the bank
      (2) The bank then gives you a bankbook or passbook, and a checkbook.
      (3) Fill out a deposit slip, present the slip with the money to be deposited, and your passbook to the bank teller.

   d. Write a negotiable personal check.

   e. Balance a stub total with bank statement.

2. Savings accounts

   a. Open a savings account at a bank.

   b. Use a savings account at a bank.

3. Loan services

   a. Identify at least three basic types of institutions whose business it is to lend money.

      (1) Banks
      (2) Small loan companies
      (3) Credit unions
      (4) Insurance companies

   b. Identify several different types of loan arrangements.

      (1) Single signature
      (2) Co-maker
      (3) Collateral
      (4) Auto

   c. Identify undesirable loan services

      (1) Pawnshops
      (b) Unlicensed lenders

d. Ask certain questions concerning borrowing money which will be a guide for your actions:

   (1) Is obtaining a loan a sensible thing to do?
   (2) Can I make realistic plans for paying off the loan?
   (3) Am I getting the loan at a reasonable cost?
   (4) Am I sure I am dealing with a fair and honest lender?

4. Interest rates

   a. Calculate simple interest

   b. Compute simple interest at 6% for 60 days.

5. Installment buying

   a. Identify the following good and bad points of installment buying.

      (1) Lets you use goods as you pay for them
      (2) Raises standard of living
      (3) Encourages thrift
      (4) Helps people get a start
      (5) Reduces a person's total buying power
      (6) Tempts one to overbuy
      (7) Two good rules to observe

         (a) Make a substantial down payment
         (b) Pay the balance as quickly as you reasonably can

6. Mortgages

   a. Define a mortgage on real estate.

   b. Explain how a borrower of money can give security to the lender through a mortgage.

   c. Describe the rights and duties of the parties to a mortgage.

7. Consumer credit accounts

   a. Identify the following three main types of credit accounts.

      (1) Revolving charge accounts
      (2) Credit card or charge-a-plate
      (3) Installment credit

   b. Describe need for credit.

8. Investments

   a. Mutual funds - To identify mutual funds in terms of investments.

b. Stocks

  (1) Identify two kinds of stock
  (2) Describe the elements involved in the issuance of stocks
  (3) Identify a stock certificate
  (4) Describe the function of dividends
  (5) Describe the procedure involved in buying and selling stocks.

c. Bonds

  (1) Identify the special nature of bonds

    (a) Physical evidence of a debt
    (b) "Senior securities"

      (i) Claims of bondholders must be satisfied before claims of stockholders.

    (c) Principle
    (d) Interest
    (e) Maturity date
    (f) Yield

  (2) List and identify three general types of bonds

    (a) U.S. Government bonds

      (i) Savings bonds
      (ii) Treasury bills
      (iii) Treasury notes
      (iv) Treasury bonds

    (b) Municipal bonds: All bonds issued by state, city and local governments.
    (c) Corporate bonds

      (i) "Mortgage bonds", which are secured on corporate.
      (ii) "Debentures:" which are unsecured promises to pay.

9. Income

  a. Compute earnings on the basis of the following:

    (1) Hourly rate
    (2) Piecework rate
    (3) Commission rate

  b. Compute deductions such as:

    (1) Social security
    (2) Income tax
    (3) Benefits

D. The student will perform, or describe the performance of, tasks involving principles and operations of insurance. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

1. Types of insurance
    a. List and describe the essential elements of the following types of insurance:
        (1) Social Insurance
            (a) Workman's compensation
            (b) Social security
            (c) Unemployment
            (d) Other forms of social insurance sponsored by our government:
                (i) Life insurance of service men and women
                (ii) Farm crops
        (2) Life insurance --four major types
            (a) Term
            (b) Straight life policy
            (c) Limited payment
            (d) Endowment
        (3) Accident and Health Insurance
            (a) Hospital expense
            (b) Surgical expense
            (c) General medical expense
            (d) Major medical expense
            (e) Loss-of-income
        (4) Property Insurance
            (a) Fire
            (b) Automobile
                (i) Bodily injury
                (ii) Property damages
                (iii) Collision
                (iv) Fire
                (v) Theft
                (vi) Medical payment
                (vii) Comprehensive
        (5) Public liability

(6) Other

    (a) Marine and inland marine
    (b) Use and occupancy
    (c) Steam, flywheel, and machinery
    (d) Title
    (e) Credit
    (f) Burglary, theft and robbery
    (g) Crop
    (h) Livestock

b. List and identify the following values of insurance:

    (1) Protection
    (2) Savings
    (3) Loan
    (4) Risk sharing

VI. Communication Skills

The student will perform, or describe the performance of, tasks involving the verbal communications section of the domain of general vocational capabilities.

A. The student will perform, or describe the performance of, tasks involving written communications. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

    1. Reading for information
    2. Reading for following directions
    3. Drafting a letter of application for job
    4. Using components of letters
    5. Writing memoranda
    6. Using the dictionary and the thesaurus
    7. Writing reports

B. The student will perform, or describe the performance of, tasks involving oral communications. In so doing, the student will display capabilities indicative of proficiency in the practical application of speaking with superiors, customers or clients, associates or peers, and with older persons.

C. The student will perform, or describe the performance of, tasks involving telephone communication. In so doing, the student will display capabilities indicative of proficiency in the practical application of taking messages, delivering messages, and answering the telephone.

A. The student will perform, or describe the performance of, tasks involving written communications. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Reading for Information
    a. Use component parts of written materials such as chapter headings, glossary, index, table of contents, etc.
    b. Select chapters or topic headings or other sections of printed material pertaining to a particular subject.
    c. Locate classified ads pertaining to a given product, to compare prices, quality, etc.
    d. Interpret the meaning of a set of pictoral instructional materials.
    e. Select a job and find classified ads showing opportunities for work in this area.
    f. Write up the order given a part's catalogue, names and part numbers for several machinery parts.
    g. Classify as to function (fact, opinion, etc.) a given set of sentences.
    h. Classify the items of information in a given set of sentences as to relative importance, using syntax as an aid.
    i. Pick out the topic sentence in each of several paragraphs.
2. Reading for following directions
    a. Perform given tasks according to directions, using driver's license booklets, catalogues, telephone directories, cookbooks, kits, etc.
    b. Interpret the more commonly used map symbols such as milage numbers, contour intervals, legends, colors, topographical symbols, directions, etc.

c. Locate designated places on a map, summarize information conveyed by the map and follow the map to a designated point.

d. Interpret plans, blueprints, and schematics to perform basic construction or trouble-shooting tasks.

e. Read and select items pertinent to a given task, given informational material (classified ads, trade journals, manuals, etc.).

f. Operate electronic information-giving equipment such as tape recorders, TV, etc., in accordance with safety and maintenance procedures.

g. Distinguish between various types of TV or radio programming such as commercials, news reports, entertainment, documentaries, educational TV, etc.

h. Classify types of films (by type, by content, chronologically, etc.).

i. Interpret terminology and symbols of basic technology to carry out specific tasks

3. Letter of application

a. Follow the instructions and fill in the form (birth-date, place of birth, father's occupation, mother's maiden name, etc.) typing, or printing legibly, given forms such as: income tax form, application for employment form, catalogue order form, application for driver's license form, personal record form, check, check stub, deposit slip, stop-payment order, etc.

b. Write and prepare for mailing a letter of application, letter of request, order letter, change order letter, letter of complaint, thank you letter, etc., in acceptable business form, including necessary information, observing rules of mechanics, usage, etc.

4. Using components of letters
5. Writing memoranda
    a. Write a memo which accurately conveys a message to another person.
    b. Punctuate written information according to punctuation rules.
6. Using the dictionary
    a. Select an unfamiliar word, look it up in the dictionary, pronounce it correctly, and select the appropriate definition.
7. Writing reports
    a. Identify types of media provided by the library such as: books, magazines, tapes, microfilm, microfiche, pictures, etc.
    b. Locate and use card catalogue, periodical files, encyclopedia and other information sources, find the materials needed on shelves or request titles by number from the librarian relative to a given topic.
    c. Locate information or a topic from sources such as trade manuals, operator's manuals, trade magazines, government pamphlets, extension service materials, etc.
    d. Interpret the various types of graphs (bar graphs, line graphs, picture graphs, etc.).
    e. Make a chart showing organization of an industry, a feeding schedule for a 4-H project, showing a profit-loss of an organization over a ten year period of time.
    f. Arrange given selected information in appropriate format

such as outline, summary, pictures, graphs, films, slides, tapes, video-tapes, etc.

g. Take accurate and adequate notes from a source of information and interpret them.

h. File materials in accordance with conventional filing rules.

B. The student will perform, or describe the performance of, tasks involving oral communications. In so doing, the student will display capabilities indicative of proficiency in the practical application of speaking with superiors, customers or clients, associates or peers, and with older persons.

1. Oral communications

   a. Write or give orally, instructions which can be followed by another person.

   b. Give speech and select tone, pronunciation, and dialect level appropriate to the situation and audience (superiors, customers, clients, associates, peers, older persons, etc.).

   c. Identify the information required to participate in an interview.

   d. Participate in an interview and demonstrate acceptable usage and courage.

   e. Demonstrate rules of parliamentary procedure.

C. The student will perform, or describe the performance of, tasks involving telephone communication. In so doing, the student will display capabilities indicative of proficiency in the practical application of taking messages, delivering messages, and answering the telephone.

1. Telephone communication

a. Make local and long-distance telephone calls, using directory, dialing, etc., in accordance with rules of form and courtesy.

b. Answer the telephone and record messages for others.

VII. Evaluation Skills

The student will perform or describe the performance of, tasks related to evaluation principles aspects of the domain of general vocational capabilities.

A. The student will perform or describe the performance of, tasks related to:
   1. Understanding needs
   2. Defining problems
   3. Understanding problems
   4. Understanding alternative solutions
   5. Establishing priorities
   6. Assessing cost/benefit

B. The student will perform, or describe the performance of, tasks related to:
   1. Planning
   2. Goal setting
   3. Determining priorities
   4. Decision making
   5. Implementing planning
   6. Evaluating

A. The student will perform or describe the performance of, tasks related to:

1. Understanding needs
2. Defining problems
3. Understanding problems
4. Understanding alternative solutions
5. Establishing priorities
6. Assessing cost/benefit

B. The student will perform, or describe the performance of, tasks related to:

1. Planning
2. Goal setting
3. Determining priorities
4. Decision making
5. Implementing planning
6. Evaluating

VIII. Human relations Principles

The student will perform, or describe the performance of, tasks involving the human relations skills section of the domain of general vocational capabilities.

A. The student will perform, or describe the performance of, tasks involving general work habits. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

   1. Punctuality, reliability, ethical behavior, cordiality, and attention to commitments
   2. Accepted modes of dress and grooming
   3. Supervision
   4. Emergencies
   5. Social situations

B. The student will perform, or describe the performance of, tasks involving sales procedures. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

   1. Standards of conduct for sales personnel
   2. Philosophy of selling and organization
   3. Policies of the company
   4. Techniques of persuasion

A. The student will perform, or describe the performance of, tasks involving general work habits. In so doing, the student will display capabilities indicative of proficiency in the practical applications of:

1. Punctuality, reliability, ethical behavior, cordiality, and attention to commitments.

   a. Demonstrate the rules of etiquette to be followed on a given job, including:

      (1) Greeting customers
      (2) Answering telephone
      (3) Conversing with superiors/subordinates
      (4) Serving customers
      (5) Job interview

   b. Associate appropriate rules of etiquette with a given job situation.

   c. Demonstrate various job conventions (the way people interact and behave on jobs) found in business and industry including:

      (1) The functions of hierarchies
      (2) Division or assignment of duties
      (3) Superior, subordinate relations
      (4) Relations with peers
      (5) Adherence to company policies
      (6) Relations with customers of people outside the company
      (7) Punctuality
      (8) Reliability

   d. Identify the rules of etiquette accepted in various social situations including formal and informal rules (this includes a variety of rules ranging from Emily Post, et al, to rules established by various formal and informal groups).

   e. List the appropriate rules of etiquette with a given social situation (e.g. the rule for formal introductions; addressing senators or congressmen, etc.).

2. Style and grooming

   a. Demonstrate the various style and grooming standards required by industrial, community, and educational institutions including:

    (1) Clothing
    (2) Hair
    (3) Cosmetics

b. Use the appropriate dress with a given job situation (e.g. working in an office, retail establishment, factory) requirements including safety, appearance, sanitation, and comfort.

c. Use the appropriate grooming with a given job situation (e.g. makeup/secretarial work, cleanliness for food processing occupations, etc.).

d. List the appropriate dress and grooming with given social and job activities (e.g. formal dinners, job interviews, etc.)

e. List or relate the appropriate dress and grooming with one's own personal characteristics (e.g. height, weight, age, etc.).

3. Supervision

   a. Demonstrate the functions of supervision in various situations including:

      (1) Control
      (2) Organization
      (3) Decision-making
      (4) Planning
      (5) Implementation

   b. Identify the roles played by the supervisor in job situations, including:

      (1) Organizational or hierarchial
      (2) Control
      (3) Decision-making
      (4) Arbitrating
      (5) Negotiating

   c. Demonstrate the appropriate functions or roles of a supervisor with a given situation (e.g. decision-making with whether or not to purchase given equipment; negotiating with the union in a strike situation, etc.).

   d. Identify the relationships of a supervisor with his subordinates (including such qualities as fairness, honesty, etc.).

   e. Identify the relationships of a supervisor with his superiors (including such duties as reporting inadequacies, safety hazards, etc.).

4. Emergencies and contingencies

   a. Identify the various emergencies and contingencies one may encounter in job situations, including:

      (1) Safety hazards
      (2) Personality conflicts
      (3) Machinery breakdowns

- (4) Strikes
- (5) Accidents
- (6) Crime

b. Demonstrate the procedures, objects or actions at the disposal of an individual for the purpose of dealing with emergencies and/or contingencies (e.g. fire extinguishers; pumping brakes on wet pavement, etc.).

c. Associate appropriate procedures, objects or actions with given contingencies or emergencies (e.g. CO_2 extinguisher should be used on electrical fires; using blocks under car wheels when changing a tire on a slope, etc.).

d. Identify the various ways in which emergencies or contingencies can be avoided or reduced.

5. Social situations

a. List the various social situations which may be encountered by the individual, such as argument between friends, behavior at party, etc.

b. Demonstrate the rules for behavior required by various social situations (e.g. etiquette; "social graces" in general).

c. List the sources in which one can locate the rules for behavior in various social situations (e.g. books on etiquette, society pages, etc.).

d. Demonstrate appropriate rules for behavior with given social situations.

B. The student will perform, or describe the performance of, tasks involving sales procedures. In so doing, the student will display capabilities indicative of proficiency in the practical application of:

1. Standard of conduct

a. Demonstrate the characteristics of effective service, including:

   (1) Promptness
   (2) Neatness
   (3) Attitude of server
   (4) Correct service provided

b. Demonstrate the rules pertaining to effective service in various situations including:

   (1) Restaurants
   (2) Retail establishments
   (3) Service establishments (repair shops)
   (4) Transportation

c. Demonstrate the appropriate rules of effective service given various types of service requirements (e.g. formal restaurant requirements vs. lunch counters; selling clothing vs. selling gasoline, etc.).

d. Select the appropriate rules of effective service given specific service requirements.

2. Philosophy of selling and organization

   a. List and explain those customer characteristics which relate to given products (e.g. age, weight, sex, marital status, etc.).

   b. Demonstrate sales techniques which are appropriate in persuading given customers to purchase given products and services (e.g. stressing convenience; appeal to youth, etc.).

   c. Match appropriate sales techniques and products and services with given customer characteristics.

   d. Identify the characteristics of customers and clients including their:

      (1) Desires and requirements
      (2) Ability to purchase goods or services
      (3) Attitudes towards salespeople and products

   e. Associate appropriate customer characteristics with given customers.

    f. Assess customers by their characteristics (e.g. hard/easy to please, meticulous, etc.).

    g. Demonstrate the appropriate procedures, attitudes and actions required to deal with customers, given identified customer characteristics.

3. Company policies

    a. List and explain the rights of the client when he purchases a product or a service (e.g. guarantee that the product or service will meet the criteria stated in advertising or salesmen's claims).

    b. List the obligations of the seller to the buyer (e.g. not misleading the customer concerning the product or service).

    c. List and explain three laws and regulations pertaining to sales and purchase of goods and services (e.g. Pure Foods Act, FDA restrictions on drugs, etc.).

    d. Demonstrate between satisfactory and unsatisfactory performance of services or conditions of products sold.

    e. Identify those legal or other recourses available to the client or customer when services or products which he has purchased are unsatisfactory.

    f. Select the appropriate legal recourse given unsatisfactory products or services.

4. Persuasion and sales procedures

    a. Identify various persuasion and sales procedures available to sales people.

    b. Differentiate between customers by their buying characteristics.

c. Demonstrate appropriate persuasion and sales procedures given a specific sales situation.

d. Demonstrate the purposes of advertising in sales (e.g. information about new products, creation of demands or needs, persuasion, etc.).

e. Identify the various media used in advertising (TV, radio magazines, posters, newspapers, etc.).

f. Differentiate between advertisers' claims about the product and/or service and the true characteristics of the product and/or service (e.g. toothpaste may clean one's teeth, but not necessarily improve one's social prowness).

g. List and explain at least two false and/or misleading advertising claims.

h. Associate various products and services with given advertising media and techniques (e.g. children's products may be shown on TV in animated form; certain adult products may be advertised in esoteric magazines, etc.).

i. Select an appropriate advertising medium and/or technique given a specific product or service.

APPENDIX C

Objectives Related to Society and the World of Work

The three principal components of the Integrated Career Development Curriculum: Basic Technologies, Guidance and Counseling, and Society and Work, have their equivalents in the general education goals of vocational competence, self-realization, and citizenship competence.

The general goals of the Society and Work component are interwoven with the general goals of social studies. This area of the curriculum is principally concerned with those concepts about the systems and processes of our society which generate, define, and lend meaning to occupations. Heavy realiance has been placed upon the findings of the social sciences for its content.

The general goals of the Society and Work component can be stated as follows. The student will:

1. Comprehend and illustrate in such ways as to demonstrate his comprehension of the concepts and principles which define the major features of his social environment. Major features of the social environment will include these five areas:
    a. The individual, his relationships with others, and the forces which influence his behavior.
    b. The nature and function of groups and membership in groups.
    c. The nature and function of the major social institutions and social organizations and their impact on the individual.
    d. The nature of society and the human community and their influence on the individual.
    e. Culture and its impact on behavior.

2. Understand change processes as they relate to individuals, groups, communities, and societies, and be able to participate in the working out of these processes as a member of society.
3. Utilize concepts and principles about man, society, and work in an analysis of his own community and the alternatives open to him in the selection of a career.
4. Learn how to learn and how to continue learning as a life-long process.
5. Become a skillful decision-maker in his own personal affairs and in community affairs.
6. Develop strong positive and realistic feelings toward himself, and come to see himself as having worth, significance and being capable of earning the respect of others. Work on this objective will enable the student to attain integrity and perspective as a human being in three specific ways. He will gain:
    a. Sufficient openness in personal identity to be able to respond to an increasing array of new things, new opportunities, and unexpected events.
    b. Sufficient closure in personal identity to attain a sense of integrity and continuity in mind and self.
    c. Sufficient perspective to understand and appreciate different life styles without either condemning them or his own.

The achievement of these objectives will involve the student in gathering knowledge about himself and his environment, comprehending the knowledge, applying it, critically analyzing interpretations of facts, activities and events, developing supportable generalizations and conclusions, developing value judgments, and making decisions based on knowledge, critical interpretation of relevant factors and reasoned value judgments.

Helping students to achieve these goals will enable them to find a place for themselves in whatever kind of society or community they live and will enable them to function more effectively as citizens, employees, and employers. It will also enable them to pursue the continuing process of self-realization.

Ours is a world of change, a world in which change proceeds at an ever accelerating pace. The individual today, especially if he is among those who migrate to the urban centers, finds fewer and fewer enduring landmarks in his environment and thus often grows bewildered. The goals and objectives of the Society and Work component of this curriculum spell out what the rural student will need to know and be able to do if he is to function effectively in increasingly complex society. Social studies can be used as the vehicle to make the social environment more understandable, more accessible, and more amenable to continuing renewal.

Two final questions related to the permanence of change should be noted in connection with the learning goals for all students: (1) What can the society and work curriculum materials do to help create attitudes and values relevant for a world which has never been seen? (2) What kind of attitudes and values will be needed to function effectively in this unknown world of the future? There is no sure or certain answers to these questions. What is clear, however, is that the curriculum should enable students to learn how to learn, and through learning to become competent self-renewing individuals. Such individuals in turn will help renew the organizations and communities in which they live and work.

The rationale in the organization and content of Society and Work

Everyone involved in curriculum development confronts the problem of organizing material in accord with a basic perspective. Those involved in recent breakthroughs in the development of social studies curricula have not been immune from this basic problem. Fenton, for example, deals with three general macro-concepts; the economic system, government, and the social structure.

The perspective which guided the development of Society and Work is a very simple one. It begins with the student and his social world as he experiences it. The major sections are:

I. The World and the Community I live in.
II. The Changing Society.
III. The Changing World of Work.
IV. The Community's Choices.
V. Career Choices and their Social Implications.

It is assumed that the student up to the time that he studies the Society and Work component will not have made a systematic analysis of his community. He will have his immediate direct experiences, which will have been shaped and formed by the community itself. While he will have studied aspects of it, and written papers or prepared reports built out of his experience, his views will be an internal member's view. The first section of Society and Work will involve him in making a somewhat systematic analysis. He will begin to take his community apart and look at it. He will be introduced to concepts which will help him in the analysis. He will learn the meaning of concepts by using them and discovering the insight they help one gain. By making comparisions of community and county with multi-county areas, the state and the nation, the student will become familiar with significant similarities and differences. This first section will deal only with what is, not with history or with change, or the way the community is changing. Students will begin this component, then, with the community as it is now. They will come to understand it thoroughly, both through experience, and the analysis of experience.

The Changing Society. Change becomes the specific focus of the second section. The student will be introduced to the basic forces changing society; the explosion in knowledge, scientific knowledge and the development of technology based on this knowledge. The student will work with the processes of industrialization, urbanization, and organizational change (bureauracy) which have been triggered by the explosion in knowledge. The effects of these processes on individuals, groups and organizations, communities and society as a whole will be studied. Students will also look at the way these processes are changing societies in other parts of the world, and tending to create a "world community."

The Changing World of Work. After working on the changing society, and the processes which are forcing change, the student will turn his attention specifically to the Changing World of Work. He will describe and illustrate with local examples the major features of the American economic system. He will examine specific changes taking place in the work force and the effects of these changes on his community and county. By analyzing and describing specific types of enterprises, he will be introduced to the setting of work, the types of jobs and practices in different enterprises, work rules in work and their enforcement, the satisfactions individuals experience in work, and the inter-relationship between work and life style. The student will be helped to confront the complex problems involved in making a career choice, and will begin to see this choice in terms of its social implications.

The Communities Choices. The fourth section, the community's choices, will engage the students in a development study of their own community. This is designed as a group project through which the students learn to design a project, to allocate resources to it, to carry it through and to make a report to the community.

Another significant aspect of this section is that it will involve the students with the decision-making process as it relates to the community as a whole. Students will be helped to see the similarities and differences encountered in making decisions in different contexts. The basic process will be the same, but the way the process is worked out will be quite different. This will help highlight the basic decision-making process.

The content of the section will enable the students to struggle with basic choices. Logically people in communities today have three choices:

1. Let forces do what they will with the community and endure the consequences.
2. Move away and attempt to find a better life elsewhere.
3. Develop the community into a better place in which to live and work within the limits of the constraints and restraints in the situation.

The students will begin with these choices and after systematically studying the situation arrive at a recommended plan of development for the community and test this plan with community leaders and citizens. Such experience as this should help students with the choices they have to make about staying in the community and taking their chances or moving elsewhere and doing the same thing.

Career Choices and the Social Implications. The final section examines the problem of career choices in its social context. Students will be helped to see the effects of job and career on their life style, their social position, and their total sense of well being and happiness. Students will be helped to design for themselves a process for making job and career choices which will be worked out in the guidance component of the ICDC.

The five sections of Society and Work are closely interrelated. One builds upon the other. The "objectives" as defined below identify the materials and the processes to be covered, and the kinds of activities in which students will engage.

The World and the Community I live in

The student will gather information, facts and opinions, about the community in which he lives and make comparisons with the county, the multi-county region, the state, and the nation.

a. Describe the people in terms of numbers, age, sex, national origin, race, family composition, length of residence, voting patterns and other such factors, utilizing census and other published data.

b. Use census data and other published material to determine how people make a living, by occupation, industry, hours of work, number of different jobs held, wages and salaries received, and people's feelings of satisfaction about the work they do.

c. List the things he would need to know to understand his community and attitudes of people living in it.

d. Construct a sample questionnaire to gather this information.

e. Interview members of his own family and a sample of people from the community to find out the organizations people belong to, how frequently they attend meetings of the organizations, how they feel about the organizations, and whether or not they serve or have served in leadership capacities in the organizations.

f. Keep a diary for a specified period of time (for example one month) to determine the number of times members of one's family goes out of the community, where, and for what purpose: to make purchases, for medical services, work, recreation, to visit, or for other reasons.

g. Interview one's parents and other adults in the community to determine the major values and beliefs people hold - the things they think to be most important in life.

h. Interview a sample of people to ascertain how they feel about the future and what they hope to achieve in the future.

i. Analyze the data gathered and make comparisons and interpretations.

j. Discuss the interpretations with selected leaders in the community.

The students will analyze the concept "community" and various ideas that it includes; people, place, sense of belonging, things in common, people served by the same agencies and organizations, a sense of common destiny, and others. They would utilize the concept in interpreting their data about their own community. The students would also:

1. Identify what they think to be the major strengths of their community.
2. Identify what they think to be its major problems.

The students would determine the ways in which their community is affected by the larger society. They would:

1. Identify some major decisions made outside the community and some of the specific effects of these decisions on their community.
2. Interview people in the community to determine their reactions to these decisions.
3. Study any action the community takes to have the decision changed or to adjust to the decision.
4. Identify contributions the community makes to the larger society and how the contributions are made.

The students will summarize the findings and prepare a report to use by them and to be placed in the library for wider use by students and by people in the community.

The Changing Society

The students will read, collect information, and analyze the significance of the explosion in scientific knowledge and technology in contemporary societies. The students will:

1. Contrast the acquisition of knowledge in traditional and contemporary societies.
2. Analyze the nature and functions of research.
3. Describe and illustrate the dissemination of knowledge, research findings, in various institutional settings; for example, agriculture, industry, medicine.

4. Discover and illustrate the impact of new knowledge and technology as they are manifest in the industrilization, urbanization, and bureaucratization of society.
5. Analyze and illustrate the individual's and society's need for order, continuity and change (renewal).

The student will read, collect information, and analyze the processes of industrialization in society - the making of an industrial society or community. He will explore, examine the effects, and illustrate specific aspects of the process in his own community, county, or state, and make comparisions with the country as a whole. The student will also analyze and make interpretations of:

1. The reasons for the decline in the number of people employed in agriculture, the increase in the number of agricultural occupations, the great increase in the number of non-farm occupations.
2. Illustrate the increased productive capacity and affluence, using income data, information on the level of living and rising expectations.
3. Illustrate and show the effects of the increase in the number of jobs and population.
4. Illustrate the effects of specialization and professionalization on work.
5. The impact of work and occupation on other aspects of a person's life and on other social institutions in the community.
6. Illustrate ways in which the pursuit of "commodities and careers" takes precedence over other goals in life.

7. Illustrate the ways in which industrialization alters social relationships and makes it more possible for people to rise in the social status hierarchy.
8. Illustrate the effects of developments in transportation on time and space relationships.
9. Illustrate conflicts in ideas and values and life perspective which emerge as societies and communities become industrialized.
10. Illustrate the ways in which industrialization makes possible separation of place of work and place of residence and enables a person to have membership in more than one community.

The student will read, gather information, and analyze the processes of urbanization, the concentration of population in urban areas. He will explore the effects of and illustrate these specific aspects of the process using his own community, county, or state. He will make comparisons with the country as a whole:

1. Concentration of population in the cities, regional centers, and industrial areas where jobs are located.
2. Development of suburbs.
3. Acceleration of the sophisticated, the urbane, the cosmopolitan.
4. New patterns, heightened tempo, and action in urban areas.
5. The shift from sacred and traditional ideas and values to secular, rational, and humanistic ones.
6. Increasingly diversified population made up of different ethnic groups, races, people from different backgrounds.
7. Conflicts in values.
8. Increased emphasis on consumption.
9. Changes in levels of expectation and levels of living.

The student will read, gather information, and analyze the changing patterns of organization (or bureaucracy) in society. He will explore, examine the effects of and illustrate these specific aspects of the process using his own community, county or state. He will make appropriate comparisons with the country as a whole.

1. Increase in (a) the number of organizations and (b) the size of organizations.
2. Development of special interest organizations as contrasted with general interest or general purpose ones.
3. Fragmentation in the community because of the large number of specialized organizations creating a difficult problem of coordination.
4. Emphasis on structure and hierarchy.
5. Growing interdependence of people, groups, organizations, and communities.
6. Increasing importance of decisions and decision-making centers outside the community and the state.
7. High emphasis on efficiency and rationality.
8. Growing personal feelings of powerlessness, impersonalness and remoteness.

The student will bring his material together in the form of a report with appropriate illustrations. He will be able to explain to other students, to community leaders, and to the teachers the forces which are changing his community. He will specifically illustrate the effects of these forces on:

1. Individuals in the community.

2. Groups and organizations in the community including the interaction among individuals as they work in and through:
    a. The educational system of the community.
    b. The economic life of the community.
    c. The political system of the community.
    d. The family.
    e. The religious system and religious ideas.
    f. The health, welfare, and recreation patterns of the community.
3. The community as a whole.
4. Society as a whole.

The student will read about and illustrate the effects of industrialization, urbanization, and organizational changes in other parts of the world and show how these forces are creating the world community.

The Changing World of Work

The student will review the effects of the processes of industrialization, urbanization, and organizational change (bureaucratization) on the economic enterprises in his community and state.

The student will describe and illustrate, using local examples, the nature and function of the American economic system. He will use in his description and analysis such concepts as:

1. Private finance capitalism.
2. Machine production with high uses of energy (coal, oil, gas, atomic power).
3. High use of scientific technology.
4. Worldwide exploitation of the materials and markets.
5. Affluence, tremendous volumes of durable and consumer goods; high consumption.

6. High use of finance and credit agencies.
7. A labor force dependent on the rise and fall of the market.
8. Patterned ways of protecting the labor force - unions and collective bargaining; unemployment insurance and compensation; many forms of social security.
9. Change of the environment; growing problem of pollution (air, water, noise, thermal).

The student will analyze which patterns of employment in his community and state build on materials and ideas developed in other parts of this curriculum and in the general social studies program. He will specifically:

1. Collect information and explain changes in the work force in his county, region, and state for 1940, 1960, and 1970, as to the number of people employed in agriculture; manufacturing; mining; construction; transportation; communication and utilities; trades; finance insurance, and real estate; services and miscelleanous; government.
2. Identify and illustrate specific effects of these changes on his community, particularly in relation to the major sources of local employment, and to migration in and out of the community.
3. Describe and illustrate the ways these changes influence the decision he will have to make about an occupation and whether or not to remain in the community or move to an urban area.

The student will analyze and describe the organization and function of at least two different types of economic enterprises in his community or area: a major U.S. corporation; a main street business; a tourist and resort business; a commercial farm; a major governmental agency such as the Bureau of Reclamation, Bureau of Land Management, the National Park Service; and the local educational system. He will compare and contrast these enterprises as to:

1. Functions performed.
2. Structure of the enterprise - he will develop a functional organization chart.
3. Patterns of organization and administration, how decisions are made.
4. How it is financed.
5. Types and variety of work force, jobs, positions, offices.
6. Work rules and their enforcement.
7. The incentives used to recruit people for jobs.
8. The kinds of satisfaction individuals experience in their work.
9. The life style that tends to develop as a result of work.

The student will become familiar with, analyze and illustrate the basic concepts of work defined as "the continuous employment in the production of goods and services for remuneration", (Dubin, 1958). The student will also:

Define and illustrate, using materials developed under the above, the three aspects of the definition of work.

1. Work is continuous.
2. Results in the production of goods and services.
3. Work is performed for pay.

The student will analyze the changing nature of work in American society. He will describe and illustrate:

1. Why many workers have more than one job.

2. Problems confronting workers when they have to change jobs.
3. The forces which make it necessary for workers to make major career changes.
4. Some of the things that can be done to facilitate major career changes.
5. The interrelationships between work and the increasing amount of leisure time or between work and non-work.

The student will describe and illustrate in specific terms the problems of choice in occupation resulting from the vast increase in the number of occupations from which one has to choose. The student will:

1. Read and become familiar with the large number of occupations listed in the dictionary of occupations.
2. List the requirements of five or more occupations in which he might be interested.
3. Develop a list of factors one would take into account in making a choice of an occupation.
4. Identify specific problems one would confront in making occupational choices.

This would conclude the Changing World of Work section of Society and Work. The process of choosing an occupation will be the concern of Section VIII. It will be developed following an analysis of the community's choices.

The Community's Choices

The students will utilize the information they have collected in parts I-III of Society and Work as outlined above and make a development study of their own community or county. This study would define the community's choices as they are seen by students and would make specific recommendations for development. It would engage the students in a planning and development program and would involve these steps.

1. Define the strengths of the community as seen by residents, community leaders, and resource people.
2. Define the community's problems and needs as seen by residents, community leaders and outside resource people.
3. Define present and potential resources of the community.
4. Define the community's goals in development and policies or ways in which the community would like to see goals achieved.
5. Define specific alternatives in development and advantages and disadvantages of each alternative.
6. Recommend a specific plan for development.
7. Propose ways and steps by which the plan could be implemented.

The students will pull together materials they have developed previously and gather additional material as needed to make an adequate inventory of the present position of the community. The students will:

1. Study reports and interview residents, community leaders, specialists in the community, and resource people from outside the community to define the specific strengths of the community.
2. Study reports and interview the people listed in 1 to define the community's problems and needs.

The students will make an analysis of the present and potential resources of the community. The students will:

1. Study reports and interview the people listed under 1 to inventory the present and potential resources of the community.

2. Summarize the material into an adequate statement of the community's present position.
3. Devise graphic and other illustrative material to communicate the major ideas to the residents of the community.

The students would develop a statement of the community's development goals. They will:

1. Interview residents, community leaders, and public officials to get their ideas.
2. Interview local specialists and resource people from public agencies and resource people from universities to get their ideas as to development goals for the community.
3. Interview students and faculty members to get their ideas.
4. Discuss the ideas suggested as development goals with residents and community leaders.
5. Develop a written statement of the development goals.
6. Discuss the statement with citizens and leaders; make suggested modifications as may be needed to make an accurate statement of the community's development goals.

The students will define the community's alternatives in achieving its development goals. In accomplishing this step, the students will:

1. Invite community leaders, specialists, and resource people to come to the class and discuss various alternatives in development such as changes in agriculture, expansion of the tourist and resort enterprises, development of local services, expansion of local industry, etc.
2. Analyze recommendations made in previous studies of the community.

3. List the advantages and disadvantages; the costs and benefits of each development alternative.

The students will test these alternatives against the community's goals. The students will:

1. Interview citizens, public officials and leaders to get their ideas as to which alternative best meets the community's goals.
2. Interview students and faculty as to which alternative they think best for the community.
3. Get the opinion of specialists and resource people as to the alternative they feel would best meet the community's goals.

The students will develop a specific plan for development on the basis of the information gathered and their knowledge of the situation. The students will:

1. Develop a clear statement of their plan and their reasons for selecting it.
2. Develop pictures, graphs, charts, maps to illustrate their plan.
3. Develop specific steps for achieving the plan.

Hold a public meeting or a meeting with public officials, community leaders, citizens, and students to discuss the student plan. The students will:

1. Develop a plan for the meeting.
2. Develop the materials needed for the meeting.
3. Conduct the meeting.
4. Review the outcomes of the meeting.
5. Include ideas developed in the meeting in the plan.
6. Present a copy of the student plan to the library, public officials and other major public agencies serving the community.

The students will evaluate their work in this section of the Society and Work component as to its educational value to them. Student ideas will be incorporated into this section with the specific objective of modifying the unit to make it more adequate to serve student needs.

Career Choices and Their Social Implications

The students will review the material developed in this section on the changing world of work and describe the specific effect of work on one's style of life. The students will also:

1. Illustrate ways in which a career choice is an act to control the future and to achieve a life style.
2. Begin to assess his own occupational aspirations and the way these aspirations will be influenced by specific career choices.
3. Identify in specific terms the kind of life style to which he aspires and which will afford him the opportunity to achieve an occupational "self image" to which he aspires.
4. Begin to clarify his own values and to show specific ways in which these values influence his feelings about occupations, his own occupational aspirations, and the life style to which he aspires.
5. Analyze and illustrate the prestige rankings of various occupations and the factors which affect prestige ranking.
6. Illustrate specific ways in which one's occupation together with his education and income influences his social position in the community.
7. Define and illustrate the ways in which the choice of a job can be fitted into a career plan which will help the student work out his values and make choices which promote his happiness and well being.

The students will deepen their knowledge of the great array of occupations from which they might choose and become familiar with the opportunity and requirements of a number of occupations to which they are attracted. The students will:

1. Assess the extent to which various occupations meet their occupational and life style aspirations.
2. Assess the pattern of interests and abilities required for success in particular occupations.
3. Analyze and illustrate what is likely to happen over the next quarter of a century to the occupations in which they are interested including changes in the projected demand for these occupations.

The students will define for themselves and test out a process which they might employ in making tentative and/or trial selections of an occupation. The students will:

1. Read and analyze the process of career choice as it is described in the literature.
2. Identify and illustrate the critical considerations in occupational and career choices.
3. Combine the critical considerations into a systematic step-by-step process which can be used to guide career choice and which will meet the students need as he sees them.
4. Define specific ways in which the information needed about oneself, about occupations, and life style can be collected.
5. Identify and illustrate the specific kinds of help students need in working through the processes of career choices.
6. Test out the processes and one's tentative trial choices through a career guidance program.

APPENDIX D

Objectives in Career Guidance (Content)

This section contains eleven goals related to an orderly program of career guidance for school youth in small secondary schools. The goals are sequential and developmental in nature. The first two goals are concerned with the basic knowledge the student must acquire in order to begin the process of vocational decision making. Goals four through eight are process goals and reflect the activities and understandings necessary to an orderly, lifelong process of career planning. Goals nine through eleven are outcome goals. If the preceding eight goals are successfully achieved, these last three goals should result. Briefly stated, the goals are as follows:

Knowledge goals:

1. The student understands that vocational decision making is a developmental process and is aware of the major factors involved in the process.
2. The student knows of the resources available in his school and community to assist him in the process of vocational decision making.

Motivational goal:

3. The student feels a need to formulate systematic vocational and related educational plans.

Process goals:

4. The student develops the capacity for self-assessment in relationship to vocational decision making.
5. The student develops the capacity to explore vocational and educational options in relationship to vocational decision making.

6. The student is given the opportunity to make simulated vocational decisions for the purpose of practicing the process of vocational decision making under a variety of hypothetical circumstances.
7. The student crystallizes his own vocational preferences and begins to lay the ground work for eventual implementation of these preferences.
8. The student is aware that vocational decision making is a life-long process involving continuous reappraisal of self, vocational options, and related career goals. Further, he is competent to undertake such reappraisal.

Outcome goals:

9. The student becomes self-reliant in terms of vocational planning and accepts responsibility in determining the course of his own career.
10. The student begins to implement his vocational and related educational plans and modifies the plans appropriately as circumstances dictate.
11. The student embarks upon a career pattern after leaving high school.

Analysis of Goals

1. The student understands that vocational decision making is a developmental process and is aware of the major factors involved in the process. process. Vocational choice is a long continuing process of development, not an isolated event. Nevertheless, there does come a time when most individuals begin to shape their plans toward some more or less specifically conceived occupational goal. When

this time will arrive for each individual is not known and is probably determined by each individual's own developmental pattern and situation. It appears important that students, at least by high school age, be made aware of the critical importance of initial occupational choice for further career development. It also appears important that the student be made aware of the factors important to the development of occupational choice and subsequent career development. Broadly stated these factors include:

Chance

Education

Knowledge of self

Knowledge of the world of work

Ability to reassess self and the world of work in the light of changing events

a. Chance. Most authorities in the psychology of vocations assign a very important role to "chance" in occupational choice and especially in subsequent career development. Chance refers to the random, situational determinants of behavior best exemplified by such comments as: "Being at the right place at the right time? or "Being at the wrong place at the right time." Chance is an important factor in occupational choice and career development at all levels, but appears to be most relevant at the lower levels of the occupational scale and among lower socio-economic groups where it is most difficult to escape from the effects of the environment or situation.

(1) The Phenonema of Chance

(a) Chance, by definition, refers to unexpected and unplanned events.

(b) Chance may act to limit or expand career opportunities.

(c) Chance is a major factor explaining why occupational choice and career development is rarely the result of a single, reasoned choice by the individual.

(d) The degree to which chance is a determining factor in occupational choice and career development appears to be related to both socio-economic level and occupational status.

(e) The effects of chance upon occupational choice and career development are related to the other major factors listed below in two ways.

/1/ The other major factors important in vocational decision making limit the effects of chance upon occupational choice and career development.

/2/ The other major factors important to the developmental process of vocational decision making enhance the individual's capacity to deal with both the positive and negative effects of chance when they occur.

b. Education. Education, both formal and experiential, is increasingly important in both obtaining initial employment and the subsequent development of a career pattern. As our society becomes ever more technologically oriented this is true not only of the professional and technical occupations but of the skilled and semi-skilled as well.

(1) The Phenomena of Education

(a) Education may be formal as in a program of study within the school setting.

(b) Education may be experiential as in work experience, social experience or simply, the experience accumulated in the process of living.

(c) Education of both the formal and experiential type may be related to a variety of occupational and career entry requirements.

(d) Both types of education may be relevant to performance in a variety of occupational or career categories.

(e) Either type of education may be both required and relevant to an occupational or career field; either may be required but not relevant; or either may be relevant but not required.

(f) Education of both types may be sequentially planned in reference to occupational choice and career selection.

(g) Both types of education serve to limit the effects of chance upon vocational development and both types serve to assist the individual deal with the effects of chance when they occur.

(h) In reference to career development, education of both types need to be considered as a life long process.

c. Knowledge of self. In an era of increased specialization each occupation and even broad career area encompassing a wide variety of specific occupations, requires of its practitioners a rather specific set of abilities both physical and psychological. In addition, numerous studies have shown that job satisfaction is dependent upon how well an occupation or career meets the needs and interests of the individual concerned. In making occupational choices and embarking upon a career pattern it appears necessary that the individual acquire the capacity to assess himself in regard to the abilities, both psychological and physical, required for the occupation or career in question and that he also assess the match between his contemplated occupation or career and his attitudes, needs, and interests.

(1) The Phenomena of Self-Knowledge

(a) Self-knowledge will serve to limit the effects of chance upon occupational choice and career development and will serve to assist the individual to deal with the effects of chance when they occur.

(b) Self-knowledge will increase the likelihood that occupational choice and career development will lead to a satisfying and happy life.

(c) Self-knowledge will increase the likelihood that the individual will be productive and valuable in the occupation or career of his choice.

(d) Self-knowledge requires continuous reassessment as abilities, interests, and needs change as a consequence of experience.

d. Knowledge of the world of Work. Not only is the world of work undergoing increased specialization as the result of advancing technology, it is also undergoing increasingly rapid change. New jobs and even general occupations come into being or become extinct almost daily. As noted in item c, each occupation or career pattern is distinguished by a particular set of required physical and/or psychological abilities. Furthermore, each occupation or career pattern is capable of meeting somewhat different constellations of needs and interests on the part of its practitioners. It appears necessary for effective vocational decision making that the individual acquire the capacity to assess the world of work in regard to the kinds of jobs or occupations that exist within his general field of interest, the abilities such occupations require and the rewards the occupation is likely to produce in relationship to the individual's needs and interests.

(1) The Phenomena Associated with Knowledge of the World of Work.

(a) The world of work is constantly changing. Under these conditions selection of a career pattern may have more long range value than selection of specific occupation.

(b) Occupations and careers require different identifiable sets of physical and psychological abilities.

(c) Knowledge of the world of work serves to limit the effects of chance upon occupational and career choice. Such knowledge also serves to limit the effects of chance upon occupational and career choice when they occur.

(d) Different occupations and careers are capable of satisfying differential sets of needs and interests on the part of their practitioners.

(e) Knowledge of the world of work requires technical skills beyond the competencies of most individuals. The resources need to be developed for making available to individuals information which they need for vocational decision making but which they cannot be expected to obtain themselves.

e. Ability to Reassess Self and the World of Work in the Light of Changing Events. As noted at the beginning of this section, occupational choice and career development is a lifelong process which is essentially developmental in nature. Due to the operation of chance factors, to the changing nature of the world of work, to developing and changing abilities, interest, needs and attitudes resulting both from formal and experiential forms of education; the individual will find it necessary throughout his occupational life to reassess his vocational and even his career goals. It would thus appear important that individuals acquire the ability to perceive vocational decision making as a lifelong process involving continuous reassessment of self and the world of work.

(1) Phenomena Associated with the Ability to Reassess Self and the World of Work.

   (a) Recognition that continuous reassessment is necessary to successful occupational and career selection and development.

   (b) Recognition that continuous reassessment limits the effects of chance when they do occur.

   (c) Knowledge of procedures and resources available for the assessment of self.

   (d) Knowledge of procedures and resources available for the assessment of the world of work.

   (e) Practice, probably simulated, in reassessment.

f. Summary, Goal 1

The major function of Goal 1 is to make the student aware that vocational decision making is a developmental, lifelong process involving the factors of chance, education, self-knowledge, knowledge of the world of work, and ability to reassess one's self and the world of work in the light of changing events. Goal 1 serves the purpose of an "advanced organizer" in Ausubel's terms. (Ausubel, 1960) (The use of advance organizers in the learning and retention of meaningful verbal material.)

If Goal 1 is successfully achieved, it should result in a state of readiness on the part of the student to begin the process of vocational decision making.

Goal 2.

The student knows of the resources available in his school and community to assist him in the process of vocational decision making.

As noted in Goal 1, the effects of chance upon occupational choice and career development may be limited by sequential educational planning, through self-knowledge of the world of work, and through recognition of the need for continual reassessment. The major focus of any program of career guidance should be upon developing, within the individual, skills necessary to carry out educational planning, self-assessment, assessment of the world of work, and reassessment whenever appropriate. However, part of such skill is knowledge of sources within the community of reliable and valid information concerning:

Programs of education and training
Self
The world of work

2. The Student knows of the resources available in his school and community to assist him in the process of vocational decision making.

Education may be considered in two categories; formal education and experiential education. Formal education relevant to occupational choice would include high school and post-high school training programs and curricula. Experiential education should include all those activities of living which have potential relevance to later occupational choice and career development

a. Phenomena associated with sources of information about formal education and their relevance to occupational and career planning.
    (1) Sources of information concerning formal programs of education and training exist in the individual's school and community.
    (2) Information concerning formal programs of education and training is important to the planning of occupational and career goals.
    (3) Sources of information concerning formal programs of education and training differ in their degree of accuracy (reliability).
    (4) Sources of information concerning formal programs of education and training differ in their degree of relevancy to vocational decision making (validity).
    (5) Sources of information concerning formal programs of education and training may be evaluated in terms of both their reliability and validity.
    (6) The evaluation of reliability and validity in regard to sources of information concerning formal programs of education and training may require expert skills. Some of these skills may be taught at less than the expert level.

b. Phenomena associated with sources of information about experiential education and its relevance to occupational and career planning.

(1) Sources of information concerning experiential education and its relationship to occupational and career planning exist in the individual's school and community.

(2) Information concerning experiential education and its relationship to occupational and career planning is important to the planning of occupational and career goals.

(3) The relevance of experiential education to occupational and career goals is much less well known than the relevance of formal education to occupational and career goals.

    (a) Most occupations and careers list specific experiential requirements for successful entry into that occupation of career. However, these are usually stated in terms of minimum requirements. It is generally felt additional experience is important to success in an occupation or career but the relationship of that experience to success is very imperfectly known.

(4) Sources of information concerning the relationship between experiential education and occupational or career patterns may be evaluated in terms of reliability and validity where that relationship is known and specified.

(5) The evaluation of reliability and validity concerning information about the relationship of experience to occupational and career choice may require expert skills. Some of these skills may be taught at less than the expert level.

(6) Since the relationship of experiential education to occupational and career goals if imperfectly known, breadth of experience is probably to be encouraged.

(7) Since the relationship of experiential education to occupational and career goals is imperfectly known, individuals should be encouraged to look for relationships and relevance in all of their activities.

c. Sources of Information Concerning Self. The primary sources of information concerning self is the individual himself and the primary technique is introspection or self examination. However, the accuracy of self-perception as it relates to occupational choice and career development is not known, even by the individual himself. It is important that sources of information about self, outside of self, be consulted and that such information be considered in one's self-examination.

(1) Sources of information concerning self are important to the development of appropriate occupational and career planning.

(2) The most meaningful source of information concerning self is self-examination. The habit of self-examination can be taught. Skills necessary for self-examination can be taught.

(3) The accuracy of self-perception resulting from self-examination is not known. Sources of information concerning self, outside of self, should be consulted and information from such sources considered in one's self-examination.

(4) The value of outside sources of information concerning self is determined by the degree to which such information can be incorporated into the individual's self-perceptions.

(5) Some individuals' self-perceptions are relatively permeable to outside sources of information. Some individuals' self-perceptions are relatively impermeable to outside sources of information.

(6) Outside sources of information concerning self are abundantly available in the individual's school and community.

(7) Outside sources of information concerning self may be of a formal nature; i.e., school guidance programs, programs of the Department of Employment Security, etc. Outside sources of information concerning self may be of an informal nature; i.e., interaction with significant others in one's environment, job experience, leisure-time activities, etc.

(8) Formal sources of outside information concerning self may be evaluated as to relevancy and accuracy. Such evaluation may require expert skills. Some of these skills may be taught at less than the expert level.

(9) There are no completely reliable or valid sources of information concerning self available. The individual must utilize a wide variety of sources and check for consistencies and inconsistencies in information in attempting self-assessment.

d. Sources of Information Concerning the World of Work. Sources of information concerning the world of work may be conceived of, as with sources of information concerning self, as either formal or informal. They may also be categorized, as with sources of information concerning education, as formal or experiential. In fact, it appears that knowledge of the world of work represents simply a specialized kind of education. This being the case, the phenomena associated with formal sources and experiential sources of education could be applied with equal validity to sources of information concerning the world of work. For this reason, phenomena associated with knowledge of the world of work will not be listed separately.

e. Summary, Goal 2

As with Goal 1, Goal 2 is essentially related to information the student needs to embark upon the process of vocational decision making. The major components of Goal 2 are that:

(1) The student recognizes that sources of information concerning education, self, and the world of work are necessary to sound vocational decision making.

(2) That sources exist in one's school and community of both a formal and experiential or informal nature that have relevance for vocational decision making.

(3) That sources of information vary in terms of both reliability and validity of information.

(4) That expert help may at times be required to assess the reliability and validity of information.

Formal sources of information will vary widely from school to school and community to community. Each school and community will need to develop its own list of such sources available to its students. Informal or experiential sources of information will also vary depending upon the community but are abundantly available in all communities. Expert assistance may be needed to help the individual understand the relevance of experience to vocational decision making.

3. The student feels a need to formulate systematic vocational and related educational plans.

Goal 3 is essentially related to motivation. Motivation is an ambiguous term at best, but is generally defined as that which energizes behavior and gives direction to behavior. Until the individual is energized to engage in the process of vocational decision making and focuses his energy upon that process, occupational and career planning will remain an essentially superficial undertaking without real meaning for the individual and with very little effect upon his life.

It is commonly believed that motivation must be aroused before information will have meaning for the individual. Thus, some may feel this goal should precede Goals 1 and 2 which are essentially informational goals. However, motivation does not come from the blue. Rather motivation is the result of information and a concomitant learning about self related to that information. The individual must perceive that vocational decision making is an extremely important factor in living and that sources of assistance exist in relationship to vocational decision making before he can reasonably be expected to be motivated to engage in the process.

While a variety of theories exist regarding the exact nature and source of motivation, it is probably most commonly believed that motivation is related to needs, both innate and learned, that are part of the individual's personality makeup. If the need to formulate vocational and educational plans is not already part of the individual's personality structure at the outset of this program of career guidance, the achievement of Goals 1 and 2 should result in a need to make such plans. Thus it is very important that personnel charged with the responsibility of implementing this program pay particular attention to the phenomena associated with Goals 1 and 2.

a. Phenomena Associated with the Felt Need to Formulate Vocational and Educational Plans.

   (1) The individual exhibits an understanding of the importance of educational and vocational planning to the process of occupational choice and career development.

   (2) The individual exhibits awareness of the major factors involved in choice and career development.

   (3) The individual exhibits an awareness of the sources available in his school and community for assistance in formulating vocational and educational plans.

   (4) The verbal and non-verbal activities of the individual reveal an intensity and direction of interest related to vocational and educational planning.

(a) The student frequently expresses a need for goal direction.

(b) The student expresses concern for his vocational and educational future.

(c) The student is seen to seek information of various kinds relevant to educational and vocational planning.

(d) Concern with educational and vocational planning on the part of the individual is frequently observed by significant others in the individual's environment.

b. Summary, Goal 3

Before the process of vocational decision making can meaningfully begin the individual must feel a need to engage in such a process. This felt need may be developed in the individual by paying particular attention to (1) the phenomena associated with gaining an understanding of the developmental nature of vocational decision making; (2) the factors involved in vocational decision making; and (3) the sources of assistance available in vocational decision making. The felt need for vocational decision making on the part of the individual may only be inferred from an observation of the individual's behavior both verbal and non-verbal.

4. The student develops the capacity for self-assessment in relationship to vocational decision making.

In Goal 1, it was pointed out that knowledge of self is one of the major factors related to successful occupational and career planning. In Goal 2, the general sources of knowledge concerning self were indicated and it was shown that self-perception will vary in the degree to which it is permeable to outside sources of information concerning self. It thus seems apparent that one of the major factors related to the capacity for self-assessment is the degree of permeability of one's self-perceptions to outside sources of information concerning self. The permeability of self-perceptions are probably primarily related to the personal-social behaviors discussed in Part 1 of the document on objectives in career guidance. Attempts to teach the individual skill in self-assessment should employ methods that encourage the personal-social behaviors listed on pages 5 through 8 of Part 1.

Knowledge of self related to vocational decision making can probably be considered under two general headings: (a) Things I Can Do. (b) Things I Want to Do.

a. Assessment of Things I Can Do. "Things I can do" may be thought of either in terms of physical abilities and characteristics or psychological abilities and characteristics. Assessment of "things I can do" implies the assessment of the obverse, "things I cannot do". While all of us probably have a generalized picture of who we are including our physical and psychological strengths and weaknesses, the habit of systematic and comprehensive self-examination in relationship to occupational and career planning will have to be encouraged as well as skill in such examination. The habit of self-examination as well as the skills involved in self-examination can best be developed by early and continuous experience in the process with the assistance of concerned and insightful observers. One of the major skills involved in self-examination is the utilization of sources of feedback concerning self and the incorporation of such feedback into a meaningful picture of self. Assistance is necessary in order for the individual to acquire skill in assessing what is relevant feedback and what is not and skill in incorporating relevant feedback into a comprehensive and integrated picture of self.

(1) Phenomena Associated with the Assessment of Physical Abilities and Characteristics.

  (a) All individuals differ in their unique combination of physical abilities and characteristics.

  (b) Occupations and careers differ in the combination of physical abilities and characteristics necessary for success in that occupation or career.

  (c) Through self-assessment, the individual may identify occupations and careers for which his physical abilities and characteristics appear appropriate. Conversely, he may identify occupations and careers for which his physical abilities and characteristics appear inappropriate.

    /1/ Since minimal physical abilities required for success in a given occupation are usually quite well known, but the relationship of maximum abilities to success is much less well known, identification of inappropriate occupations generally has more validity than the identification of appropriate occupations.

(d) The physical requirements of occupations and careers change and since individual physical abilities and characteristics likewise change, the individual must engage in continuous reassessment of both.

(e) Assessing the relevance of physical abilities and characteristics to occupations and careers may require expert assistance. A minimal amount of such assistance is probably available in almost all communities.

(f) Knowledge of one's physical abilities and characteristics are based upon a variety of sources of feedback.

/1/ Performance in physical activities.

/2/ The reactions of significant others in one's environment.

/3/ Information from medical examinations and reports

(g) Self-knowledge of one's physical abilities and characteristics based upon the above sources of feedback may or may not be accurate.

/1/ Feedback may be incorporated into the self-concept in an essentially accurate way. It may be warped and misinterpreted to fit previously developed perceptions of self. The information based upon the above sources of feedback may even be denied awareness because it does not fit strongly held, previously developed perceptions of self.

(h) The individual must be encouraged to critically examine his self-perceptions in regard to physical abilities and characteristics and assisted in acquiring skill in using and integrating all available sources of feedback.

/1/ This will require, initially, the assistance of sympathetic and skilled others. Where evidence exists that the individual is denying or warping the results of feedback, professional assistance may be required.

(i) A list of physical abilities and characteristics generally considered relevant to occupational choice and career development may be obtained from the Dictionary of Occupational Titles. Specific occupations differ so much in regard to physical requirements, each occupation must be investigated separately for specific requirements.

(2) Phenomena Associated with the Assessment of Psychological Abilities and Characteristics.

(a) All individuals differ in their unique combination of psychological abilities and characteristics.

(b) Occupations and careers differ in the combination of psychological abilities and characteristics required for success in that occupation or career.

(c) Through self-assessment, the individual may identify occupations and careers for which his psychological abilities and characteristics appear appropriate. Conversely he may identify occupations and careers for which his psychological abilities and characteristics appear inappropriate.

(d) Psychological abilities and characteristics required for occupational or career success are considered as important as physical abilities and characteristics but are less well known. Thus, the problem of relevance or validity is greater with psychological variables than physical variables.

(e) As with physical variables, and for the same reason, self-assessment in regard to psychological abilities and characteristics is probably more valid for identifying inappropriate vocational choices.

(f) Continuous reassessment of psychological abilities and characteristics is necessary since both the individual's abilities and characteristics change as do occupational and career requirements in regard to these characteristics.

(g) Assessing the relevance of psychological abilities and characteristics to occupations and career demands is more likely to require expert assistance than assessing the relevance of physical characteristics to occupations and careers. Such assistance is also less likely to be available in small rural communities.

(h) Psychological abilities and characteristics relevant to the question, "things I can do" include:

/1/ Aptitude. This may be defined phenomenally as "things I can learn to do".

/2/ Ability. This may be defined phenomenally as "things I can now do".

/3/ Values or attitudes. These may be defined phenomenally as "things my beliefs will allow me to do". Values or attitudes will also have relevance for "things I want to do".

(i) Knowledge of one's psychological abilities and characteristics relevant to the question "things I can do" are based upon a variety of sources of feedback.

(j) Sources of feedback relevant to "things I can learn to do" include:

/1/ Critical Self-examination.

/2/ Performance on a variety of new or different learning tasks.

/3/ The reaction of significant others to our performance on new or different learning tasks.

/4/ School grades in different areas of the curriculum.

/5/ Performance on standardized measures of aptitude.

(k) Sources of feedback relevant to "things I can now do" include"

/1/ Critical self-examination.

/2/ Performance on a variety of tasks.

/3/ The reaction of significant others to performance on a variety of tasks.

/4/ School grades in different areas of the curriculum.

/5/ The results of standardized measures of achievement or current learning.

(l) Sources of feedback relevant to "things my beliefs will allow me to do" include:

/1/ Critical self-examination.

/2/ The individual's reactions to the beliefs of others revealed in either their comments, behaviors or in written material.

/3/ Reactions of significant others to the individual's comments or behaviors with emphasis upon what those reactions imply about "my" beliefs.

/4/ Individuals with whom the person identifies. Individuals the person rejects.

/5/ The conscious and deliberate development of a "philosophy of life" including a code of ethics.

/6/ The results of standardized measures of belief and attitudes.

(m) The most basic and valuable source of feedback relevant to "things I can learn to do", "things I can now do" and "things my beliefs will allow me to do" is critical self-examination. Critical self-examination is an activity not frequently engaged in by most people. Guidance will be required to develop both the habit of critical self-examination and the skills involved in such examinations.

(n) The skill most important to critical self-examination is gathering information about self from sources outside of self and incorporating that information into a meaningful picture of self. Guidance will be required to teach the individual relevant sources of information about self. Guidance will also be required to assist the individual to come to terms with such information. Where the individual is incapable of coming to terms with such information, professional assistance may be required.

b. Assessment of Things I Want to do. Unlike "things I can do", "things I want to do" are completely psychology in nature. Although preferences for a variety of physical activities will be included, it is the phenomena of preference which we must consider rather than the physical activities themselves. The primary relevance of "things I can do" is to obtain and maintain employment in an occupation or career. Of the two, the first may be more critical in the sense that its effects are most absolute. However, in another sense, most of us have the capacity for wide range of employment but may find limited satisfaction with much of that employment. Identifying "things I can do" and relating them to occupations and careers will, for most individuals, rule out relatively few occupations. Identifying "things I want to do" and relating them to occupations and careers may be a more important undertaking to the development of a rewarding life for most of us. Unfortunately, it is also much more difficult. Minimal physical and psychological requirements for employment are relatively well known for most occupations. Individual physical and psychological limitations of a significant nature are relatively easy to assess. The individual rewards inherent in an occupation or career are much more subtle and difficult to assess as are the person's psychological characteristics relative to the question "things I want to do".

(1) Phenomena Associated with "Things I Want to Do".

   (a) "Things I want to do" are more private kinds of information than "things I can do". Thus they require even greater skill in critical self-assessment than "things I can do".

      /1/ There are fewer sources of information outside self for "things I want to do" than for "things I can do".

   (b) "Things I want to do" may be described best as preferences for certain goals and activities over other goals and activities.

   (c) Each individual has a unique combination of preferences.

   (d) Each occupation or career pattern offers activities and opportunities related to different combinations of individual preferences.

   (e) Lack of valid and reliable information concerning both individual preferences and occupational opportunities related to those preferences makes matching difficult. Such matching is a possibility, however, in regard to broad career patterns.

   (f) Individual preferences as well as occupational opportunities for satisfaction of those preferences will change making reassessment necessary throughout life.

(g) Preferences are related to at least the following psychological terms: needs, values, aspirations, and interests.

/1/ Needs may be defined phenomenally as: "a lack of something which, if present, would yield satisfaction." Needs may be innate or learned in nature. They are typically thought to be the major motivating factor in personality. They act to both energize and give direction to behavior.

(h) There is no common agreement either in regard to the source of needs or the nature of needs.

/1/ For purpose of this outline Maslow's (Maslow, 1943) list of needs will be used since they appear more useful in a guidance framework than most. Maslow makes the assumption that his list of needs operate in a hierarchical fashion. That is, needs lowest on the list must be satisfied before higher order needs will act to motivate the individual. That assumption is not part of this outline.

(i) Maslow's list of needs includes: 1. Physiological needs, 2. Safety needs, 3. Love and belonging needs, 4. esteem needs, 5. Self-actualization needs, 6. the need to know and understand.

(j) According to our phenomenal definition of need, the individual may feel a lack in any of the above needs and behavior is energized and directed toward satisfaction of the need. Such behavior may include occupational choice.

(k) Values may be defined phenomenally as: "a concept of the desirable". While differences may exist between "values" and "attitudes", for purposes of this outline we will accept an attitude of being symptomatic of an underlying value. Values and resulting attitudes act primarily to influence the individual's acceptance or rejection of persons, things, and ideas.

(l) Occupational choice may be related to values. As noted in Section VIII (page 88 /2/), values, if strongly held, may be related to "what I can do". If less strongly held or if the occupational choice is less clear cut in regard to the values it reflects, values may be related to "what I want to do".

(m) Aspiration may be defined phenomenally as: "the goals toward which one directs his efforts". Aspriations may be conceived of as resulting from "needs" and/or values of the individual.

/1/ Aspirations will reflect unsatisfied needs.

/2/ Aspirations will reflect the individual's concept of the desirable.

(n) Interests may be defined phenomenally as: "the objects and activities that stimulate pleasant feeling of the individual." (Super, 1962) distinguishes between four kinds of interests: expressed, tested, inventoried, and manifested.

/1/ Expressed interests are simply those stated by the individual orally or in writing.

/2/ Tested interests are inferred from an individual's responses to tests of knowledge or ability.

/3/ Inventoried interests are determined by the individual's responses to special instruments designed to reveal preferences for objects and activities. The two most frequently used instruments are: The Strong Vocational Interest Blank and The Kuder Preference Record.

/4/ Manifested interests are inferred from the activities most frequently engaged in by the individual.

(o) Interests are frequently considered to be the result of the individual's needs, values, and aspirations.

(p) Sources of information concerning needs, values, aspirations, and interests are much less reliable than sources of information concerning "what I can do".

/1/ Needs are probably the strongest determinants of "what I want to do", values possibly the next strongest, and aspirations the third strongest, and interests the least important determinant.

/2/ Unfortunately, the reliability of information concerning the above variables is inversely to the importance of the variable in determining "what I want to do".

(q) Sources of information concerning needs, values, aspiration, and interests.

/1/ Critical self-examination.

/2/ Interaction with significant others in our environment including our reactions to them and their reactions to us.

/3/ Published measures of "personality".

/4/ Expressed, tested, inventoried, and manifested interests.

/5/ Autobiographies, biographies and other techniques of self-revelation.

/6/ Habitual activities.

(r) Guidance will be required to teach the individual relevant sources of information concerning needs, values, aspirations, and interests. Guidance may also be required to assist the individual to come to terms with such information. Where the individual is incapable of coming to terms with this information, professional assistance may be required.

c. Summary, Goal 4.

The most important skill to be developed in relationship to vocational decision making is the skill of self-assessment. Assessment of self is essentially a subjective process. Guidance will be required to teach the individual skill in checking the reliability and validity of his self-perceptions against outside sources of information about self. Coming to terms with outside sources of information about self will be enhanced if attention is directed toward the personal-social behaviors listed on pages 88-93 of this document.

5. The student develops the capacity to explore vocational and educational options in relationship to vocational decision making.

With Goal 4, sources and skills involved in self-assessment were discussed. Self-assessment must be combined with assessment of vocational and related educational options to complete the process of vocational decision making. As pointed out in Goal 2, sources or information about the world of work may be separated into formal and experiential sources. Goal 5 is related primarily to developing skills in seeking relevant information about vocational and educational options from both formal and experiential sources of information about the world of work.

a. Phenomena Associated with Skill in Seeking Relevant Information About Vocational and Educational Options from Formal Sources of Information Concerning the World of Work.

   (1) The student is made aware of formal sources of information concerning the world of work available in his school and community.

   (2) The student is made aware that information concerning the world of work may be related to information about self to develop vocational and educational options.

   (3) Practice is provided the student in seeking information about the world of work from formal sources within his school and community.

   (4) Practice is provided the student in relating information about self to information from formal sources to develop vocational and related educational options.

b. Phenomena Associated with Skill in Seeking Relevant Information About Vocational and Educational Options from Experiential Sources of Information Concerning the World of Work.

   (1) The student is made aware of sources of work experience available in his school and community.

   (2) The student is made aware that work experience is a relevant source of information about the world of work in general.

   (3) The student is made aware that work experience and information about the world of work gleaned from such experience may be related to information about self to develop vocational and educational options.

   (4) The student is made aware that all work experience may not be relevant to specific occupational and career patterns which appear to be related to that work experience. Those variables which cause a student to favorably consider his work experience may or may not be characteristic of the occupation or career in general.

   (5) The student is made aware that occupations or careers in general may include favorable elements that are not present in his work experience.

   (6) Practice is provided the student in:

      (a) Seeking sources of work experience in his school and community.

      (b) Relating information about self to information from experiential sources to develop vocational and related educational options.

(c) Determining what, in his work experience, is relevant to the occupation or career in general.

(d) Determining what is characteristic of the occupation or career in general that may not be characteristic of his present work experience.

c. Summary, Goal 5

Exploring vocational and educational options is essentially related to the process of matching information about self to information about the world of work. Thus the reliability and validity of information about the world of work is an essential element in the process. Skill must be developed in assessing the reliability and validity of information gathered either from formal or experiential sources of information.

6. The student is given the opportunity to make simulated vocational decisions for the purpose of practicing the process of vocational decision making under a variety of hypothetical circumstances.

Goal 4 is concerned with both the content and process of self-assessment. Goal 5 is concerned with the content and process of considering vocational options. Goal 6 is concerned with providing practice in matching characteristics of self with characteristics of occupations and careers under a variety of hypothetical circumstances. Matching is never a simple process and the perfect match is rarely if ever attained. Goal 6 will serve to demonstrate this fact to the individual and should develop skill in balancing and weighing both benefits and liabilities related to a variety of vocational choices. It will provide understanding and practice in the process of compromise which is an inevitable component of vocational decision making. The activities involved in practicing vocational decision making will also provide feedback relevant to self and the world of work which should help in further sharpening the individual's perceptions of himself and his related vocational and occupational goals. This will be particularly true if the individual is given assistance in finding what is relevant in his simulated experience to further understanding of self.

Unlike the previous goals in this outline, we are not dealing with new phenomena in Goal 6. Goal 6 is concerned with applying phenomena already developed in a discussion of previous goals. For this reason there will be no attempt made to break the content of Goal 6 down into phenomenal elements. Kay concepts related to Goal 6 appear to be: (1) matching; (2) compromising; (3) feedback; (4) relevance.

7. The student crystallizes his own vocational preferences and begins to lay the groundwork for eventual implementation of these preferences.

Following simulated practice in vocational decision making, it is now appropriate that the individual begin the actual process of vocational decision making. A tentative career plan is formulated and the individual begins to lay the groundwork necessary for the achievement of the elements of that plan. At this stage in the developmental process of occupational and career choice, it is probably necessary that career plans be broad, somewhat tentative and with related career options clearly available. It is probably also necessary that feedback be clear and frequent to the individual embarking upon the process. This latter requirement implies a need for careful monitoring at frequent intervals of the individual's progress in laying the groundwork for his career choice. Individuals planning to embark upon a career following high school graduation will, of necessity, have to develop fairly clear-cut goals and related educational plans rather early. Even in this case, career options and secondary goals should be part of the process of vocational decision making. Individuals whose career planning involves post-high school preparation will have more opportunity for vocational exploration within the broad context of their career plans.

At this stage of career development, the individual should be able to state his vocational and related educational goals at least in fairly broad terms. He should also be able to state secondary vocational and educational options. Further, the individual should have a clear operational plan for achieving both primary and secondary objectives. It is important that persons charged with the implementation of this outline for career guidance realize that vocational choice made at this stage is not immutable or irreversible. Indeed tentativeness and exploration should be encouraged at this stage as the individual embarks upon the lifelong process of career development.

Key concepts related to Goal 7 appear to be: (1) operational plans; (2) tentativeness; (3) secondary goals; (4) monitoring and feedback.

8. The student is aware that vocational decision making is a lifelong process involving continuous reappraisal of self, vocational options, and related career goals. Further, he is competent to undertake such reappraisal.

The developmental, lifelong nature of career planning has been emphasized throughout this outline. In goals one through seven, the necessity for reappraisal of self, the world of work, and related vocational and career options has been repeatedly discussed and the phenomena associated with reappraisal have been explored. Goal 8, like goals 6 and 7, is simply an action related goal in which the individual demonstrates his understanding of previous goals and the phenomena associated with those goals.

Competence in reappraisal can be adequately demonstrated only in the life of the individual as he moves through the process of career development. Though it would be difficult, longitudinal studies designed to demonstrate competence in reappraisal as a function of various modes of career guidance would be a major contribution to the field. For purposes of this outline, however, we probably must content ourselves with behavior which demonstrates knowledge of career pattern variability and allow for simulated practice in coping with change. We must look for evidence that the individual can and does utilize the guidelines for coping with change discussed in the previous goals of this outline. It is not the intent of this goal to assist the student in detailed longitudinal career planning since it is virtually impossible to forecast with any degree of accuracy what lies ahead for the individual. The purpose is rather to allow the student to apply his knowledge of techniques of reappraisal which will be of value to him in coping with change as it occurs throughout his life.

Key concepts related to goal eight appear to be: (1) career pattern variability; (2) coping with change; (3) reappraisal; and (4) simulation.

Outcome Goals.

In goals 1 and 2 the knowledge base for vocational decision making is prepared and a learning set established which is further developed in Goal 3. Goals 4 and 5 establish the key phenomena associated with vocational decision making; skill in self-appraisal, appraisal of the world of work, and reappraisal as a method of coping with change. Goals 6, 7, and 8 do not introduce new phenomena but are concerned with practicing the skills developed in previous goals and starting the individual on his lifelong process of vocational development. Goals 9 through 11 are outcome goals which reveal the success or lack of success of goals 1 through 8 in assisting the individual in the process of vocational decision making and career development. As with Goals 6, 7, and 8, no new phenomena are associated with Goals 9, 10, and 11. Rather they are goals which allow us to evaluate the success of our program of career guidance and may allow at least a limited amount of remediation where it appears the program has failed.

9. The student becomes self-reliant in terms of vocational planning and accepts responsibility in determining the course of his own career.

In Goal 7, the student begins the process of career development in a tentative manner and with close supervision and guidance. Vocational decision making is an intensely personal matter however, and the individual must ultimately assume full responsibility for his own decisions. Goal

9 encourages increased self-direction in career planning. "This is not to suggest that students will no longer seek help from others with their vocational problems, but that they acquire a knowledge of resources which will allow them to cope with vocational decision making in a sophisticated and intelligent manner. As individuals accomplish the previous goals of this outline, they accumulate a body of knowledge and experience which can be applied to future vocational events and which progressively allows the student to develop self-reliance" (Campbell, et al.). The intent of goal 9 is to gradually decrease dependence and increase independence. The individual must come to see himself as an active agent in determining the course of his own career. Not only has he learned skills that limit the effects of chance upon his own career development, but he no longer feels as if he is a victim of chance.

The application of career guidance should begin no later than the early secondary school years. By ninth grade the student should probably embark on the kind of tentative vocational decision making outlined in Goal 7 and by the twelfth grade should have achieved a large measure of the self-reliance indicated in the present goal. The intervening period is a period of progressive weaning by those charged with the responsibility of the career guidance program with careful monitoring both for purposes of evaluation and remediation where necessary. Of course vocational decision making does not stop at graduation from high school and self-reliance becomes even more critical as one leaves the protective environment of school. Thus, if possible, follow-up of the individual following termination of the secondary school experience is appropriate, again both for purposes of evaluation and remediation. This will be particularly critical for the student who terminates his school career early. As Tiedeman observes, the socially and economically disadvantaged are most likely to be those individuals who lack a sense of self-reliance and are most likely to feel themselves the victims of chance. This group, of course, is also the group most likely to terminate their public school careers early.

Self-reliance in vocational decision making is inferred from the behaviors of the individual. Such things as self-initiated conferences with school or community personnel concerning vocational planning; expressed confidence concerning one's future and one's goals; the development, orally or in writing, of the individual's vocational plan; and the self-initiated seeking and locating of related employment or training are all behaviors symptomatic of increasing self-reliance.

Key concepts related to goal 9 appear to be: (1) Self-reliance (2) Weaning (3) Monitoring (4) Evaluation (5) Remediation (6) Follow-up (7) Self-initiated vocational activities.

10. The student begins to implement his vocational and related educational plans and modifies the plans as appropriately as circumstances dictate.

This goal is closely associated with goal 9. It is evidence that the career guidance program is effective and that the individual has assumed responsibility for vocational decision making. The activities involved in this goal are initiated while in school but continue on throughout the course of vocational and career development. The evidence for achievement of this goal may partially be accumulated from behaviors of the individual while still in school but requires a long and extensive follow-up throughout life for complete evaluation.

In school activities related to this goal include applying for college admissions, interviewing for a job, and seeking out of community resources of information and referral. The school may assist the individual with these activities and also utilize these activities as indicators of success of the career guidance program. Long-range vocational behaviors after leaving high school related to this goal include career planning, reassessment of self and vocational opportunities, etc. It is expected that this career guidance program will assist with these developmental, long-range problems of vocational decision making but evaluation will require long and perhaps unrealistic programs of follow-up.

Key concepts related to goal 10 appear to be: (1) Evaluation (2) Assistance with short-term vocational behaviors (3) Follow-up.

11. The student embarks upon a career pattern after leaving high school. This goal simply states that if this career guidance program has been effective, the individual will achieve a satisfactory, lifelong career pattern. As noted in Goal 10, evaluation of this goal involves long-range longitudinal or survey research. Such research will involve problems of methodology and cost which may be prohibitive in terms of the current career guidance program.

    Key Concept: Research methodology.

12. Summary

    It is believed that self-assessment and reassessment represent at once the most important and most difficult element of the career guidance program. Individuals vary in the insight they are capable of achieving into self. The importance of implementing this program within the context of personal-social behaviors described on pages 131 to 135 of this document cannot be stressed too much. Such implementation will do much to increase the permeability of the individual's self perceptions to outside sources of information concerning self.

APPENDIX E

Rural Students and the Rural Setting

The Integrated Career Development curriculum must take into account the characteristics and needs of its target population - students in small, rural high schools in the five states of Arizona, Colorado, Nevada, New Mexico and Utah. It must exploit the strengths of rural students and the setting in which they learn. It must also recognize the constraints imposed upon it by these same students, the limitations of resources available in rural areas, and the conditions that effect their learning. It is the purpose of this statement to identify some factors relative to the rural student, his school and his community which are pertinent to the ICDC. This identification will be in the form of certain generalizations based on rural sociological and vocational research, literature in the fields of rural sociology and vocational education, and the studies and experience over almost ten years of the Western States Small Schools Project.

Since these are generalizations, it is recognized that they may or may not apply to a particular student, teacher, school, or community. While they must be taken into account in the development of an ICDC, the developers must also recognize the infinite variability in their target population by facilitating and insisting upon local modification of the curriculum to meet needs of specific students and to exploit the specific strengths and minimize the specific weaknesses in local school settings.

Demographic Factors

Although the United States along with the rest of the world is experiencing a "population explosion", the total rural population in the U. S. is actually diminishing. "In the decade 1950 to 1960, the increase in urban population absorbed more than 100 percent of total national growth; that is, total rural population, including non-farm as well as farm, actually diminished for the first time." (Hauser, 1969). Moreover, even though projections indicate a continuation of this "explosion" those same projections indicate very little increase in non-metropolitan population. (Griessman, 1969).

The farm population in rural areas has decreased heavily and this decrease is expected to continue. Where the rate of decrease in population in rural areas has been checked, it has been due to the increase of the non-farm population.

Not only is rural population declining or at best remaining static, the age distribution in that population reflects a heavy out-migration of young adults, over the past several decades. (Griessman, 1969). The population of rural areas represents a large proportion of the young and of the old.

This out-migration has implications for ICDC. Most of the migration has been sporadic and unplanned. Many of the young adults who have moved to urban centers have been ill-equipped for the journey and the new urban setting. Also, since the heavy migration occurs after the years of public education are completed, the rural areas tend to invest heavily in the education of youth who will make their economic contribution to society in the urban setting.

The occupational structure in rural communities is changing. A U.S.D.A. report shows that employment in agriculture, forestry, and mining decreased dramatically between 1950 and 1960. Employment in service occupations particularly professional services and those related to finance, insurance, and real estate increased greatly as did employment in manufacturing and trade. The technological revolution has increased production per man-hour on the farm to a point where in 1970 one farmer produced enough food for forty persons whereas in 1940 his efforts had fed only 11 persons. At least two-thirds of the rural labor force presently are non-farm workers. Technological advances not only have contributed to the decreased employment in agriculture, but have also decreased the rural demand for unskilled labor. The increased mechanization of the farm is noted here not only because of the sheer number of people who have been displaced by the rapid changes that have occurred, but because it shows an attitudinal acceptance of new ideas on the part of producers of food and fiber, at least in relation to that production.

One additional factor relating to the occupational structure in rural communities is noted. The national investment in recreation is immense. More and more rural areas are being devoted to multiple uses that include tourism and outdoor recreation. (U.S.D.A., 1967). This is particularly true in the states represented in ICDC. This can mean new occupational opportunities in rural areas.

Rural Students

While the numbers of students are small in rural schools, these students still represent the same range of individual differences found in any school. For example, a recent study in Utah found that the range of IQ's in rural and urban high school samples was not significantly different nor was the proportion of students at any IQ level significantly different. (Simmons, 1969). It is fair to assume that the spread on almost any measure of ability, interest, need, etc., is as great in rural schools as in urban.

National studies and reports indicate that larger numbers of students in rural America come from economically disadvantaged families than do students from urban areas. (Mercure, 1964; Udell, 1967). This is true of students in the schools participating in this project. Some concerns of this general low socio-economic status of rural youth for ICDC includes the scarcity of reading materials in the homes, generally lower educational level of parents, and lack of funds for education.

Nationally, there is evidence that the educational and vocational aspirations of rural students are lower than those of urban youth. (Haller, 1963). However, this is not true in some of the schools represented in this project. The study by Mark Simmons in Utah quoted above showed no significant difference in this respect between rural and urban students. The experiences of some of the WSSSP staff indicate that rather than low aspirations, the unrealistic aspirations of some rural youth is the greater problem. In any event, as Taylor and Jones have pointed out (Taylor & Jones, 1963) occupational types are limited in rural areas, peer group experiences are homogeneous in terms of social class and thus rural students have little opportunity to come into contact with varied occupations, differing levels of aspiration and value systems. The real world of work is outside the experience of rural youth; and the world at work that they experience is narrow and excessively limited.

Those rural students who migrate to urban areas find themselves poorly prepared to compete with urban reared youth. (Advisory Council on Vocational Education, 1968; Haller, 1969). This is due in part to the lack of vocationally oriented programs in small schools. Poor motivation may also play a part. (Sewell, 1963). In any case vocational education must be expanded and made relevant to student interests in rural areas if this situation is to improve. And, this effort must deliberately exploit all the strengths of the rural setting including those of the rural student.

In general youth in rural communities are afforded greater opportunities for developing independence and responsibility than are their contemporaries in the urban setting. The absence of large numbers of people and resulting regulations and restrictions provide a setting supportive of a large measure of individual freedom and a wide choice of alternatives for personal decisions. The absence of commercial facilities for entertainment and recreation, the absence of many of the services available in the city make the rural family somewhat more self-sufficient than the urban family and should result in a higher degree of responsibility accepted by all family members. Although there is little empirical evidence that these factors do or do not in fact create more independence, more responsible citizens, it is important to this project to recognize that there are great opportunities in the rural seeting available for use in developing such qualities.

The rural student typically comes from a family that is stable and whole. Parents generally have an intense interest in their children and are supportive of both the child and those who would help the child. His home environment is supportive and provides security and many opportunities for self-expression and the exercise of responsibility. As a result the rural student is generally capable of self-direction. Extremes in wealth usually are not great in rural areas, thus stratification of students into cliques along class lines is not an acute problem. Drug use is less widespread and less of a problem than in urban schools.

There is some evidence that students in small rural schools perceive of themselves as being less adequate than students from metropolitan areas. The WSSSP staff has observed repeatedly that rural students tend to stress their inadequacies and lack of confidence in their skills, abilities and experience when faced with social interaction or academic competition with students from large schools. A recent study at the University of Utah comparing rural with metropolitan students found that "when they (rural youth) are asked to rate their abilities and social position, they do it in relation to the people living in the industrial, urban, and bureaucratic environment. And they rate themselves low" (Snarr, 1970). Although studies have proven that rural youth have a greater opportunity to participate socially than urban youth and even perceive social interaction to be more important (Barker, et al. 1962; Snarr, 1970), it would appear that learning to participate in a small school is just that and does not transfer to learning to participate in other situations. The results of the Snarr study would indicate that rural students are receiving qualitatively inadequate opportunities for social participation. At any rate rural students perceive that their participation is the wrong kind to prepare them for the world "out there." (Snarr, 1970).

Rural Schools

The rural high schools represented in the five states of this project are small, generally less than 200 students in grades 9 through 12. Teacher-pupil ratios are low, the mode being less than 1 to 20. Staffs range from 7 to 18 teachers.

These schools are organized for instruction in a variety of ways. The most prevalent organization is the traditional six or seven period day, 40 to 55 minutes in length with each class taught by one teacher who is solely responsible for the achievement of students in that class. A few schools have flexible schedules which provide some unstructured time for students. Some of the schools provide team teaching, usually continuous progress, non-graded, notably in English and math. Individualized programs are being developed in some of the schools, but for the most part the traditional, groups structured programs are the common mode of instruction.

The physical plants of these schools vary from obsolete, early 20th century structures to the finest in modern school plants. All have adequate classroom space and some have modern shop and work facilities notably in woodwork, auto mechanics, vocational agriculture, business and home-economics. A few have electronics and drafting facilities. Some lack even basic facilities for shop work and none has facilities to provide skill training in a variety of occupations.

Most of the schools have a part-time librarian, and many of these do not meet minimum state standards for this position. A few have a full-time librarian, and all have a library.

Compulsory attendance laws require that students in the five states concerned attend school through high school graduation or at least through sixteen years of age.

Rural schools tend to be more traditional and more resistant to change than urban schools. Programs never really designed for the rural setting have been adopted by these schools and linger on even after they have been modified or removed from the urban schools for which they were designed. (Advisory Council on Vocational Education, 1968). The general focus on academic or college prep courses in rural schools is a case in point. An examination of the course offerings in most small, rural schools in the five project states shows a great imbalance between college prep offerings and vocational offerings. Bright students particularly are encouraged to concentrate on college prep courses and others must take a majority of such courses since little else is available. Small schools have not moved toward a comprehensive curriculum to the extent large schools have.

Most small rural schools have an inadequate tax base for providing innovation. Coupled with this is the fact that many such schools are educating a large number of young people who will never contribute to this tax base (migration, see above.) As a result, funds are scarce and resources for change limited. (Advisory Council on Vocational Education, 1968).

Size in terms of staff as well as student enrollment is a pervasive factor lending both strengths and constraints to curriculum design. Low teacher-pupil ratios make individualized instruction possible. On the other hand, small student numbers and limited staff competencies make the traditional response to a wide range of individual student differences through a variety of class offerings impossible. Small numbers of students also have a bearing on the variety and adequacy of materials and equipment available to the student.

The rural school has traditionally been much more of a community institution than the city school. However, in recent years increasing symptoms of the withdrawal of the small school from its community have been noted. Dr. Ed O. Moe has identified some of these symptoms and they have relevance here: (Moe, 1969).

1. The school's preoccupation with its own problems.
2. The reluctance of school people confidently to defend the role of the school in the public arena as they do in conventions and professional journals.
3. The traditional detachment of the schools from community life in the minds of the educator, citizen, and parent.
4. The usual one way planning procedure of the school activities, i.e., recreation, library, curriculum.

5. The teaching staff residing outside the community.
6. Lack of personnel to give attention to the community's total development.
7. The school officials not feeling any pressure or support to engage in the community's development.
8. The reluctance of school people to become entangled in political-civic activities.
9. The school's relative lack of consciousness of the community's development as a means to the true ends of education.

Teachers in Small Schools

Just as students in rural schools represent the whole spectrum of student characteristics and abilities, so do teachers in these schools include the skills, competencies and characteristics of teachers in any schools. However, there are some generalizations that can be made about rural teachers and their teaching task that are pertinent to the designers of curriculum for rural schools. These represent both strengths and constraints that such designers must be aware of.

The teacher in the small school can know each of his students well. The student can have identity in such a school. The teacher in the high school will teach each child in a number of classes. The nature of the small community not only makes it possible but almost demands that the teacher know each child through repeated school and community contacts. He will also know the child's parents, siblings, home environment and often the child's problems and aspirations. This strength of identity, if exploited fully, can be of critical importance to the quality of education in the rural community. It is worthy of note that teachers in small, rural schools perceive as its main advantage the chance to know their students better. (Borg, 1965).

The teacher can also know the community. He can understand community aspirations and bias, goals, and taboos. He can identify the community resources, both human and material, potentially available to the school in support of a program. And he can mobilize such resources in a small community for the support of a program almost informally, without activating a huge, formal mechanism. Teachers in small schools perceive this to be one important advantage of teaching in such schools. (Borg, 1965).

The teaching staff in small schools has the potential for flexibility in operation not approached in large schools. It is able to innovate, undertake new programs, try new ideas without establishing massive administrative and organizational mechanisms. It is possible to gear up for a new program in a relatively short time, and it is also possible to identify problems in the program quickly and effectively and adjust to such problems. This high degree of flexibility possible in small schools can be a valuable asset.

The lag between what is known about learning and what is done about it is greater in small schools than any others. (Mort; Cornell, 1941). Teaching is, thus, less effective in these schools. Several factors contribute to this exaggerated lag: (1) The difficulty is recruiting and holding the most competent teachers in rural areas; (2) The lack of support services to teachers; (3) The isolation and insulation of these teachers from the mainstream of educational thought; (4) The absence of professional stimulation; (5) The urban orientation of the certification process and educational backgrounds of new teachers; (6) Lack of community pressure or demand for change; (7) Poor facilities; (8) Lack of funds; (9) Lack of a broad competency bank on the part of the total school staff either in subject content or in instructional know how.

The introduction of vocational subjects in small schools is often prescribed by the availability of teacher competencies in a particular area. This is an extremely limiting factor in the variety of vocational offerings. There are few exceptions to this in the small schools served by this project.

Teachers in small schools are generally resistant to change. Some of the factors mentioned above contribute to this. The WSSSP project has identified school staffs as the single most potent obstacle to change in rural schools. However, this same project has demonstrated that teachers can and do change, and it is the consensus of the WSSSP staff that such change is facilitated when the status of the teacher is enhanced by the change, where the change does not put unreasonable demands in time and competencies on the teacher, where the teacher is comfortable with the new role and responsibilities, and where the teacher perceives of the need for change.

The following perceptions of teachers teaching in small schools of their job may have some relevance to those working in this project (Borg, 1965):

1. The vast majority of teachers currently employed in small rural schools prefer teaching in such schools. This would suggest that these schools offer real attractions for some teachers.
2. The attractions of the small rural school are not confined to teachers with rural backgrounds. About half of the teachers in this sample came from communities of more than 5,000 population.
3. Although the majority of respondents considered their teacher training experience to be satisfactory, a substantial minority

made specific criticism. Elementary teachers most frequently expressed a need for training in more subjects as well as a need for better training in methods.

4. Liking for and identification with small rural community life is an important factor in determining teacher satisfaction in the small rural school.
5. The recreational interests of teachers who prefer small rural schools differ in several ways from the interests of those who would prefer to teach in a larger urban school.
6. Teachers who prefer the small rural school perceive as its main advantages the chance to know their students better, the feeling of belonging in the small rural community, and the smaller classes that are often found in small rural schools.

The Small Rural Community

Small rural communities are often beset by many problems: declining population, out-migration of youth, poverty and economic stagnation, lack of leadership, and inferior educational opportunities. Such communities are generally conservative, somewhat suspicious of change and often feel increasingly powerless in determining their own destinies. (Moe, 1969).

Despite the traditional view of the rural community as being the stronghold of independence and self-sufficiency, a view still advocated by a significant number of rural residents, rural communities are linked to the wider society by an increasing number of centralized organizations. More and more small communities are coming under the influence of forces originating outside the local area. The focus of power in the small community is being removed from the control of that community in the direction of greater interdependence, centralization, formality and interpersonality.

(Griessman 1969). The resultant frustration of small communities, their inability to locate and utilize resources available to them and the feeling of powerlessness engendered by this situation is a reality that should be considered by ICDC designers.

On the other hand, these same communities have certain characteristics that if exploited can contribute greatly to a student's learning. Experience of the Western States Small Schools Project in the operation of a career selection education program in fourteen small, rural schools has shown that the small community is rich in the variety and sophistication of its human resources. People in the communities represent a wide background in experience and competencies particularly in relation to occupations. Furthermore, WSSSP experience has demonstrated that this rather impressive bank of support can be made available to the student in the small school if a systematic effort is made to mobilize it. And this can be done at little expense to the school.

Likewise, the physical facilities of the school can be expanded significantly by the use of community facilities. Much of the equipment needed in the basic technology domain of the ICDC , if not available in the school, can be found in one form or another in the small community. These physical community resources can play an important role in a vocational program.

The small community also represents a rich setting in terms of the real life activities and participation available to the student as carriers for many of the concepts in the curriculum. In effect the small community can provide a laboratory setting for the student, and this can be achieved without excessive administrative red tape and restrictive coordinating machinery. Just as the small school is potentially flexible, its relation to and support by the small community can also be built on flexibility.

APPENDIX F

Working Guidelines for the Project

An analysis of the content as presently defined, a consideration of the strengths and constraints existent in the small school and community make possible some generalizations about the curriculum, its instructional content and instructional mode. These are:

1. The curriculum must be personalized. It was pointed out that the range of student difference is just as great in small schools as in large. A multiplication of class offerings to meet these differences is virtually impossible because of the small numbers of students and faculty and the limited range of teacher expertise. The only feasible approach to provide for such differences, therefore, would seem to be through a curriculum focused on the learner and manageable by the learner. The favorable teacher-pupil ratio in small schools, the strengths of identity and flexibility make individualized programs entirely feasible.

   This means that the content at the instructional level must be sufficiently varied, particularly in depth that it will relate to all students. More important, it means that an instructional mode (delivery system) must be devised that will allow for individual interests and backgrounds.

2. The curriculum materials and activities must be student manageable. It was noted above that teacher competencies in small schools, as elsewhere, are limited, and that a traditional teaching assignment in a small, rural school tends to be grossly unmanageable. It follows that an instructional system must be created by the project which

will maximize learner involvement in manageing his own instructional program. An examination of the content makes it self-evident that no single teacher and likely no single staff in the small school can provide the necessary expertise to encompass this content. This expertise must be provided by the curriculum.

3. The curriculum will be structured in such a way that to implement it effectively the teacher will provide diagnostic and consultative help to the student as needed.

A personalized curriculum implies that the student embark on a learning sequence that is consistant with his needs, interests and abilities. A student manageable program implies that the student can locate and utilize the necessary space, equipment, peers, materials, indeed all of the resources to follow a particular learning sequence. It is assumed, however, that the learning will be more efficient if the learner has access to help if needed. The teacher is in a unique position by training and assignment to provide this help. Moreover, freed from the task of dispensing knowledge, designing lessons, and in general mediating all learning, he will have time to provide such help. The teacher in the small school has advantages, too, in performing this redefined role. The intimacy of the small school and small community allows him to know the student well, his family, his background, his interests and aspirations. These are important in helping the student determine a direction to follow and in diagnosing problems he may encounter. Admittedly, the teacher may be short on diagnostic and consulting skills but it also must be admitted that training directed at this specific shortcoming will be more effective than training aimed at the whole gamut of competencies generally associated with the teaching act. The chances of the teacher being successful in this more manageable role are great, particularly in the small school.

As a consultant, a facilitator, the teacher also has some things going for him. He will be trained by the project in the retrieval of materials, information and directions produced by the project for student use. More important, he probably knows the resources of the school and the community very well. WSSSP projects in Career Selection Education have demonstrated how effectively community resources can be identified and mobilized for use by students through the efforts of a local teacher. The teacher can provide this help for the student and at the same time experience success and satisfaction with his work. The ICDC project teacher will also be trained in student-teacher planning skills. These will be skills in helping students map out a learning program that matches his needs and goals.

4. The curriculum must be relevant to the student. Relevancy as a source of motivation and transferability of learning is generally recognized by educators. It is not a problem unique to the small school. It is mentioned here because of the problem presented by the content identified for this curriculum in relation to the rural student. Some of the content, particularly in the Society and Work domain may seem to lack immediate relevance for such students. It is essential that the instructional system be designed so as to overcome this problem. It is assumed that while the in-life situations with which the student must cope when he migrates to an urban setting may be new to him, many of the same phenomena may be found in the social-business setti

in his rural community.

5. The curriculum will provide appropriate group work and activities. The content in career guidance and particularly in Society and Work demands group interaction. A community analysis and community planning are not reasonable tasks for individuals working separately. Knowing self requires the individual to operate and interact in group settings. The instructional designers must identify those functions best learned in a group setting and provide for these. Further, research tells us that students learn much from one another, that social learning is important. Yet individualized instruction has often been equated with learning in isolation. At best most individualized programs provide for social learning only incidentally. It should be provided deliberately by this project.
6. The curriculum must provide for integration across the three domains, Basic Technology, Society and Work, and Career Guidance, and also for integration or blending with present school subjects.

   This is a "given" for the project, promised in the proposal. However, the need for such integration received further substantiation by an examination of the content as well as by a consideration of the setting in which the curriculum is to be implemented.

   This is a "whole" curriculum designed to provide the students with enhanced career opportunities. It has been divided for convenience and manageability into three areas, yet these are interrelated supportive of one another and dependent upon one another. For example, the content of the career guidance area deals with decision making, specifically career decision making. But the content of the areas of

Basic Technology and Society and Work are also essential to career decision making. It is necessary that the content and the delivery system assure that the student see the wholeness of the curriculum and not just the isolated bits of instruction.

The rural student has almost no experience with the realities of the urban world of work. He does not have the experiential background to provide the integration of the three domains as we have identified them. Therefore, it will be a prime responsibility for the project to provide for this integration through engaging him in projects that can be carried out within the context of the small school and rural community and that bring him into contact with the phenomena of urban life. Without it the curriculum will be of little value to this student.

The project will also produce curriculum products which can be blended into present instructional program where this is desirable. Actually, these products should be provided in such a form that they can be used by students in existant classes, by students in a separate class set up for this purpose, or by students independently at their own initiation. All three patterns are currently in use in project schools. Thus the ICDC curriculum products must lend themselves readily to flexible management without encouraging excessive duplication and overlap.

7. The curriculum should include the specified resources and materials. Because of the variety of school settings represented by amounts and variety of materials, equipment and facilities, the basic content of the curriculum should be provided by the project to the school. Only those materials, equipment and resources known to be available to all schools should be merely referenced in the materials sent to the schools. All others should be contained in the materials.

An exception may be in the in-depth materials. Here reference to the necessary resources can be made and the school can make the decision as to its acquisition. An examination of the content and a survey of the schools show that most of the equipment required is available to the school if community facilities are used. The curriculum must take into account these resources and must provide for modifications where the necessary resource is lacking.

8. Funds are a problem in rural schools. Any program must get the maximum mileage from each dollar spent. Therefore, what this curriculum must provide is more learning for less or equal money. It must provide a positive cost-benefit ratio. It is also important that the direct costs to student be controlled. Efforts must be made to keep costs from increasing significantly for either the school or the student, and if and where costs are increased by this curriculum, there must be justification for the increase in terms of greater learnings.

9. The curriculum must provide articulation with post high school experiences available to the target population.

   Since the preparation of students under the ICDC is not focused on job entry level, it is important that both the scope and the delivery system provide a link with post high school vocational preparation programs. It is also necessary that the project establish contacts with institutions that provide post high school training not only to provide curricular articulation but to acquaint such institutions with ICDC and to pave the way for ICDC graduates entering them.

10. The curriculum should provide for planned work experience or on-the-job training related to the curriculum and instructional mode.

    Employers are asking for youth with work experience and proper work habits. On-the-job work experience can produce such young people. The nature of the small community makes such programs relatively easy to administer. This strength must be exploited.

11. The curriculum must provide for the mobilization and utilization of all community resources, particularly the bank of competencies represented in the people of the community. The fact that such resources are present and available for use to support students has been demonstrated in the Career Selection Education project of WSSSP. This represents a significant strength in the small school and must be utilized.
12. The curriculum must contain motivational components that have sufficient power to overcome low aspirations and motivation in some rural students. The relevancy discussed in item #4 above may be of greatest importance in this respect. If the content of the curriculum is distilled from real life behavior and if the delivery system provides immediate relevance by engaging students in real life experiences they perceive as being important to them, motivation will be largely provided for.
13. Every effort must be made to offset the disadvantage represented by the limited role models in the rural community. This may be done by emphasizing the relationship and common elements of all occupations and by the extensive use of mediated learning experiences. (episodes, dramatizations, etc.).
14. The curriculum must provide for local variation and improvisation to meet unique local needs.
15. The instructional content and mode must be usable in a variety of schools organized for instruction in a variety of ways.

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